

"This American Forestry Association is your association, and if you want to make it the force it should be throughout the land it depends on you. You are not good members if you do not go home and get a half dozen new members. What is the use of talk without work, what is the use of belonging to this association unless you do something? Go home with the resolution in your hearts to uphold your officers and the Association as only American men and American women can." ::

Charles Lathrop Park, in address at the annual meeting.



GOV. ROBERT P. BASS, OF NEW HAMPSHIRE, PRESIDENT OF
THE AMERICAN FORESTRY ASSOCIATION.

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THE PROGRESS OF FORESTRY*

By HON. ROBT. P. BASS
GOVERNOR OF NEW HAMPSHIRE

IT is a source of deep satisfaction for us to contemplate the large acreage of forest lands that have passed into public ownership and management in this country since the forestry movement started. The forest reserves which were created in 1891, and later more appropriately named "National Forests," have been increased in area and now include about 190,000,000 acres. Many state forest reservations have been created, established, so that at the present time about one-fifth of the forest area in the country is owned by the public. To this extent at least has a system of management looking toward the protection, improvement and wise use of our timber supply present and future been insured for the benefit of all the people. It is particularly gratifying to note the growth in technical efficiency by which we are rapidly realizing the best ideals in the management of these public forests.

The states are also coming to the front, recognizing their duties in providing efficient fire protection, aiding private owners in reforesting waste lands and in educating the public in the best methods of handling timber lands. There are now *twenty-three* states that maintain active departments of forestry. Of these *twelve* employ technical foresters in charge of all state forestry activities.

While we are rejoicing in the changed attitude of the public mind toward forestry, let us continue to exert our influence to maintain and steadily improve public forest policies. Above all, let us recognize that a great field of usefulness awaits our efforts in bringing about a more economic management of private forests. At present about four-fifths of the timberlands of the country are in private hands and it is our earnest desire to see as great progress in this field during the next decade as the past decade has witnessed in public forestry.

The total timber cut of the country in 1900 was 35 billion feet, in 1905 37½ billion, and 1909 44½ billion. The enormous increase shown by these figures

*Address of Hon. Robt. P. Bass, President of the American Forestry Association, at the annual meeting in Washington, D. C., on Jan. 9, 1912.

demonstrates beyond question the importance of extending the practice of forestry to commercial lumbering operations.

In order to achieve this end, it is necessary that all of the different forces pursue their work in the closest harmony. The results already accomplished seem wonderful when we realize that until very recently the different private owners, the states and the federal government have been working almost independently of each other. During the past year or so the idea of co-operation has gained headway rapidly. Especially significant is the co-operation among timberland owners for protection against their common enemy, fire.

To the Pacific Northwest belongs the credit for the first large timber owners' protective associations. There are a number of such in the north-western states, most of them belonging to a central organization, the Western Forestry and Conservation Association. The general method pursued is to assess the individual owners on an acreage basis, the funds being expended for fire fighting, the employment of patrolmen and for educational purposes. The strongest test of the efficiency of co-operative fire protection came soon after these associations were formed, when the northwest experienced the most dangerous fire season in its history. While the loss was heavy for the region as a whole, only about $\frac{1}{2}$ of 1% of the timber in the associations was destroyed.

The first association of this kind in the East was formed in New Hampshire in 1910. It represents an ownership of 1,200,000 acres and, during the recent summer of severe drought, proved the efficiency of such co-operation. An association has also been formed in the Lake States, representing an ownership of 2,000,000 acres. It is interesting to note that these associations now represent over 14,000,000 acres and that they offered protection to as much more contiguous territory not represented in the associations.

THE NEED OF CO-OPERATION

These examples of the benefit derived from *private co-operation* indicate the larger benefits which will result from full co-operation between the *Federal government*, the *state* and *local government* and *private owners*.

For the promotion of such co-operation there is no better practical instrument at hand than Section 2 of the Weeks Act, which appropriates \$200,000 to enable the Forest Service to co-operate with states in protecting forests against fire on the watersheds of navigable streams. This provision has been in operation during the past summer and the results are extremely gratifying.

The experience of my own state in this respect may be of interest. New Hampshire was the first state to enter into co-operation with the Forest Service under the Weeks Act and the work began on June 4, 1911. The \$7,200 allotted by the Federal government provided for the employment of 24 forest patrolmen, who worked under the direction of the State Forester. The State furnished the administrative machinery to make the patrolmen's work effective by providing supervision through district chiefs, and by maintaining lookout watchmen to co-operate with them. The actual fighting of fires was done by the

towns, again under the direction of the State Forester. The New Hampshire Timberland Owners' Association employed patrolmen for territory not covered by the Federal men. It built lookout stations where the State was unable to do so, and distributed fire fighting tools where needed. This united action resulted in confining fires in the White Mountain region during our most serious droughts of recent years to about .6 of % of the wooded area.

Realizing the great possibilities of such co-operation, it is the earnest desire of all friends of forestry that this appropriation under the Weeks Act be continued.

I have emphasized the importance of co-operative fire protection, but recognize that it is not the main feature and purpose of the Weeks Act, which was intended primarily to acquire national forests in the East. While the co-operative work now being developed will bring all the forestry forces closer together and ultimately accomplish fire protection, the actual purchase and management of forests by the government will be the only way in which many of the forests on the higher slopes of our eastern mountains can be managed properly, and the quickest way to demonstrate to private owners the practicability of forestry on their own holdings.

We rejoice, in fact, that the Geological Survey has approved over one million acres on the navigable streams in the South and that the first purchase of over 18,000 acres has already been made in that region. We regret, however, that delays have lost \$3,000,000 of amount originally appropriated and would urge upon Congress the reappropriation of this fund so it will not be lost to the purpose for which it was originally intended.

There is a strong feeling throughout New England for the early purchase of lands in the White Mountains. The Forest Service, pending the report of the Geological Survey, has examined considerable land and is ready to negotiate with the owners for its purchase as soon as a favorable report is obtained. It is my understanding that the Geological Survey is making a careful study of small drainage basins selected for the different extent to which the forests in them have been cut, that on these areas they are making a study of the relation of the precipitation to the run off in order to determine the effect of the cuttings. I am sure you will all be glad to know that the Director hopes to make a favorable report on this region this coming spring.

THE ASSOCIATION'S PROGRESS

It would seem entirely fitting at this time to recall some of the mile-stones in the history of our organization. The American Forestry Association was founded in Cincinnati in 1882. During the earlier period of its activities such men as Dr. B. E. Fernow and Mr. F. H. Newell of the Reclamation Service, were influential in shaping its policies in the support of the cause of national forestry. It advocated the passage of the forest reserve laws and was directly responsible for the initial legislation passed in 1891, giving the President power to withdraw lands from the public domain for forest reservations. It secured the appointment of a committee of the National Academy of Science, of which Mr. Pinchot, Dr. Brewer of Yale, and three others, were members. They were

to report on a policy for the management of Forest Reserves and, as a result of their investigation, President Cleveland made his now famous withdrawals of timber land from the public domain.

The Association has published and maintained the magazine, now known as AMERICAN FORESTRY, since 1898. During the past year it has taken over the circulation of the organ of the National Conservation Association. We shall do all in our power to continue the cordial spirit of mutual assistance which now exists between these two associations.

During the decade just passed the Association has been active in its support of the work and policies of the National Forest Service. Wherever possible it has co-operated in developing and aiding state forestry movements. It has constantly advocated the Appalachian-White Mountain reservation bill and my distinguished predecessor in this office, the Hon. Curtis Guild, was most potent in aiding the final passage of the Weeks Bill.

Even this hasty reference to some of the salient features in its history shows the part that our Association has taken in establishing and shaping the National forestry policy of our country.

OUTLOOK FOR THE FUTURE

Now as to the future. We want first of all to extend our influence as generally as possible over the country. We want to co-operate equally with the East, the West, the North and the South. We want to continue as an active force for the advancement of a liberal national forestry policy.

We should use our influence to obtain for the Forest Service an adequate appropriation for the administration of the national forests. All measures coming before Congress looking to the advancement of the forestry interests of the country will receive our hearty endorsement, and those measures inimicable to the purposes of our Association should be unmasked and laid before the public in their true light.

Our relation to state forestry should follow the same lines, with slight variations as to details. We shall co-operate in any movement for the establishment of state departments of forestry throughout the country and for the development of effective forest fire protection. We can do much through our publication toward educating and preparing public opinion for a more equitable and scientific method of forest taxation.

We should encourage the establishment of state forest reservations wherever such action is possible.

Our Association is especially adapted to become a medium for creating more complete co-operation between the Federal government, state governments and private timberland owners.

We can serve as a uniting link to bind all local forestry societies into one unit, in order that they may bring the greatest influence to bear on public questions effecting the timber policy of the Nation. We can serve as a clearing house for the exchange of ideas and experiences in forestry from all sections of the country. Furthermore, we should get in touch with those states which

ALL THAT REMAINED OF A FINE FOREST AFTER A DESTRUCTIVE FIRE.





ANOTHER VIEW OF DESTRUCTION CAUSED BY A FOREST FIRE.

have no local organizations and fill the gap until local forestry societies are firmly established.

Our magazine, AMERICAN FORESTRY, can perform a public service of first importance by advocating all the foregoing policies. The extent of its usefulness is directly measured by its circulation and it is our purpose to extend that circulation by every means at our command. In this endeavor I solicit the active co-operation of every member of the Association.

We are planning to give this magazine a more popular tone than it has heretofore had. This we hope to accomplish by lessening the number of technical articles and broadening the scope of the publication. We want to put it in the hands of as many timberland owners and people interested in forestry as we can possibly reach.

In closing let me emphasize the fact that the American Forestry Association is entering on a new era in its activities. It is adopting a definite constructive program for the future, to which it will give its unqualified and vigorous support. We are striving to enlist the active interest of influential public spirited men and women throughout the country. We are engaged in a task which, if successfully consummated, will inure to the fundamental and permanent benefit of the whole Nation. Let us all put our shoulder to the wheel and help.

The New York Conservation Commission which has made an examination of the forest conditions on lands of State institutions, at the request of the Fiscal Supervisor of State Charities, reports that of the total acreage of 8,908, about forty per cent, or 3,568 acres, is badly in need of the application of practical forestry.

Traces of the deadly chestnut blight which was believed to be confined to the eastern section of Pennsylvania have recently been discovered in the western section west of the Alleghenies.

The Pennsylvania State Branch of the National Conservation Association is arranging to launch a plan for a state park. Governor Tener, is understood to be heartily in favor of the plan.

Hon. J. J. Kindred, Representative from the 14th District of New York, has had printed in the Congressional Record, the resolutions adopted by the American Forestry Association at its annual meeting on January 9, and Representative F. E. Wilson presented the resolutions to the House of Representatives.

The Southwestern Lumbermen's Association held its annual meeting in Kansas City, Mo., on January 24, 25 and 26, and members report that it was a very successful gathering.

OPPORTUNITIES FOR FORESTERS

BY PROF. AUSTIN CARY

UNIVERSITY OF MINNESOTA

A CONDITION has been reached just recently to which some have been looking forward for a considerable time—an excess in the number of graduates of forestry schools over the number of opportunities for employment in the line of work toward which most of them have thus far gravitated. Over one hundred and seventy men took the examination for Technical Assistant in the Forest Service last spring, while the Service had places open in that regular grade for only about sixty of them.

Fortunately, there are other opportunities. The Service has taken in many as rangers or on a temporary basis. The developing reserves in the Lake States have wanted some new men; and just lately the administration of the Indian Office has made room by beginning the organization of a technical force. The work of the older states and of teaching calls each year for a considerable number. In one and another of these ways the bulk of the class has now been placed, the balance going out into private employment. 1911, however, marks a turning-point in Forestry education in this country in that the National Service failed to claim the men available. The fact is notable enough to start discussion as to present tendencies in the Forestry movement, and especially regarding the nature of the training given in the schools which have increased so fast in numbers in the last few years.

Regarding the schools and the courses of training they offer, newness is one feature which is evident and which it is worth while to recall. It is little over a dozen years since there were no forest schools in this country, and many of us can remember our own lack of faith and confidence when the first professional forest school was established at Cornell. That school was established by an able man, thoroughly grounded in forestry science and familiar with the position and achievements of the profession abroad. The course of study was broad and fundamental, and it is not to its discredit that the school was later closed.

Again, when Pinchot and Graves founded the Yale School of Forestry they had a perfectly clear idea of what they wished and expected to do. They felt the need in the country of a body of broad-gauge, high class men to lead in the movement of that time—men to start the National Forest work on a high plane, to guide state legislation, to serve as teachers and leaders throughout the country—men of intellectual capacity and of enthusiasm, who could be counted on to push their own way in whatever direction they might get turned. It was a bold conception strongly followed up, and the judgment of those men is fully vindicated today.

A considerable number of courses in technical forestry have been opened at colleges and universities within the last eight years. Several are graduate



PENNSYLVANIA STATE FORESTRY STUDENTS LAYING OUT LOGGING ROADS OVER LANDS RECENTLY LUMBERED AND BURNED.
Photo by Hugh P. Baker.



PENN STATE FORESTRY STUDENTS MAKING GROWTH STUDIES IN FELLED HEMLOCK.

Photo by Hugh P. Baker.

schools, requiring a college degree for entrance. More give undergraduate work. The curriculum in these schools is laid out closely after one pattern (silviculture, mensuration, management, protection, etc., tied more closely to botany than to any other related science) and the majority of teachers are very recent graduates, giving out, without great added resources derived from experience and independent study, what was given to them. Precedent and the National Forest work together have given tone to the thing. If newness is one feature of forestry training in our colleges and universities, comparative similarity of aim and method is another. One feature is undoubtedly connected with the other, and a main point of the present discussion is to see if we do not need to diversify our work and broaden our field.

SOME REFLECTIONS

The following reflections may be considered as more or less sound:

First—The natural relation of forestry to agriculture is evident, and the farmer is usually situated so as to utilize knowledge of forestry principles. Some instruction in forestry ought certainly to be given in every agricultural college, and many efficient men will likely gain entrance to the forestry profession through this means.

Second—Because of the interest and educational value forestry science has, and because the forestry cause needs the co-operation of influential men, the subject may win some place in general collegiate, as in popular, education.

Third—But training which professes to equip a man for a calling is a different thing. The number of schools and size of classes will of necessity be limited by the opportunities for satisfactory employment which graduates can find, and training must be carefully adapted to the service it is to be put to. This seems axiomatic to be sure, but may not be as simple as it looks. At any rate, if changes are needed or promising fields as yet unoccupied can be found, recognition of this is important not merely for the schools themselves whose field may be enlarged, but to the forestry cause in general, for nothing surely can promote it more effectively than to have its interests bound up with the present fortunes of a body of active, intelligent men.

Answer to the questions whether schools of forestry are giving the best sort of training to their students and whether they are fulfilling to the utmost the purpose they might serve will largely turn on our conception of what forestry is and of the kind of man who may be rightly denominated a forester. Ideas are not settled and uniform on those points.

"The Forester" to the United States Government and the forestry officials of some of our states represent the term to many. These men have big executive duties imposed upon them and by nature of their offices must be somewhat in the line of diplomats and politicians as well. Large capacities are essential for these men and the broadest training is none to good. The profession is being stretched to fill these places creditably today, but it doesn't require many men to fill them.

Many think of the forester as an observer, inquiring into the facts, botanical, entomological, silvical, and others that relate to forest life and growth and putting results out in literature perhaps, to be utilized or to fall

by the wayside as the case may be. Useful work this when well directed and carried out, but the same rule holds as before that no very great number of men can be supported in it. The case stands the same with the teachers. These will be maintained only to the extent to which there are those to be taught

But there is a sense, as consideration will show, in which all these classes of men are hardly to be called foresters themselves at all. They teach forestry, study forestry, make forestry possible, but forestry itself as an art, consists in practice, in the intelligent management of forest land; and the forester is or will be the man who directly carries out this work. Such when independently looked at seems to be the simplest and most evident meaning of the terms. Such men are the foresters of Europe, or nine-tenths of them are. This direct and practical conception, some believe, is a very important one for the schools to grasp more clearly at the present time.

FORESTRY WORK IN THE WEST

The truest representatives of the forestry profession, as it exists in the country today, are probably the men who after the sifting of the last half dozen years are now bearing in the West the load of administration of the National Forests. These men have been too busy with their own jobs to have had much to say about other things, but they have been piling up experience, and now, with their work reasonably well in hand, they see clearly what it is going to be like and have ideas of their own as to the kind of men they want to help them in it. For them many illusions have been dispelled. The work has been different far from what they thought it when they left their studies. These they have had to forget mainly while they devoted themselves with all the force there was in them to meeting certain big, rough, insistent conditions and facts. The scientific principles which they were taught in college are not indeed lost, but for the present they are in large measure thrust into the background of their minds. The day's work meanwhile is nine-tenths plain, straight administration—protection, development, surveys, business dealings with a variety of people, in circumstances not guaranteed to be either easy or pleasant, for the glamor of frontier life has mainly passed away.

Now these men looking out from their own experience toward future helpers and successors, do not despise college education or technical training; in the plans of the Service they do not fail to recognize the necessity of exact scientific study of the elements with which they deal; least of all do they undervalue a grasp of and loyalty to the big, simple, underlying principles of forestry. But they do see that proper balance among interests has to be maintained, and that to them means that for a long time to come the scientific aspects of the work, as far as time, expenditure and numbers of men are concerned, must take a secondary place. If anything were needed to show the soundness of this position, last year's fires in Idaho and Montana ought certainly to serve.

To those responsible for the forest schools these men would say that while they expect always to welcome a considerable number of highly trained



PENN STATE FORESTRY STUDENTS VISITING STATE FOREST NURSERY AT GREENWOOD FURNACE, PENNA.
Photo by Hugh P. Baker.



FORESTRY STUDENTS IN CAMP.

Photo by Hugh P. Baker.



FORESTRY STUDENTS EXAMINING A GROWTH OF SEEDLINGS FOR PLANTING ON STATE LANDS.

Photo by Hugh P. Baker.

men to their forces, supplies of that sort do not by any means solve the problem of forest administration. The Ranger force is quite as essential—plain, simple men ready to do and to stay with the actual work in the woods. Further, they would say, or some of them would, that the technical men so far supplied have not by any means been the fittest possible instruments for the work. Natural fibre and adaptability have full more to do with efficiency than training. Too much schooling may make men over-fond of theory, conceited in its possession, needlessly hard to break into actual service, or even entirely unfitted for the rough work in hand. The high ideals which the schools can justly claim for most of their men, are desirable, only, to be effective, they must be bound up in a physical and mental make-up which causes a man to enjoy and last at this kind of work.

Now young men brought up in towns and cities and going through eastern universities may indeed develop into the best possible material for the work of the National Forests, but it is by no means certain that they will. Plenty of young westerners with very limited training who drift into the Service from natural adaptability are proving of just as much use. The technical men, at any rate, must stand the test of efficiency in actual service.

CHARACTER OF THE WORK

To review: The work of administration of the national forests is in the main plain, rough work and backbone of the Service will always be made up of men who in the good sense are essentially plain and simple minded, satisfied to stay with their jobs and in the conditions which they involve. Natural fitness and capacity are essential for these men and appropriate training which will enable them to understand the things immediately about them, but not necessarily of a very broad or elaborate type, will be a great help. And for men who on this level show exceptional ability lines of promotion must be forever kept free. For a considerable number of them of thorough technical training there will always be room, for specialties and in scientific positions to a limited extent, but more numerous in the administration force. Requirements here are changing somewhat and standards are steadily rising. Experienced Service men believe that the training of the majority should be more largely on engineering and business lines than it has been in the past, with less emphasis perhaps on botanical studies.

So much for this branch of the subject.

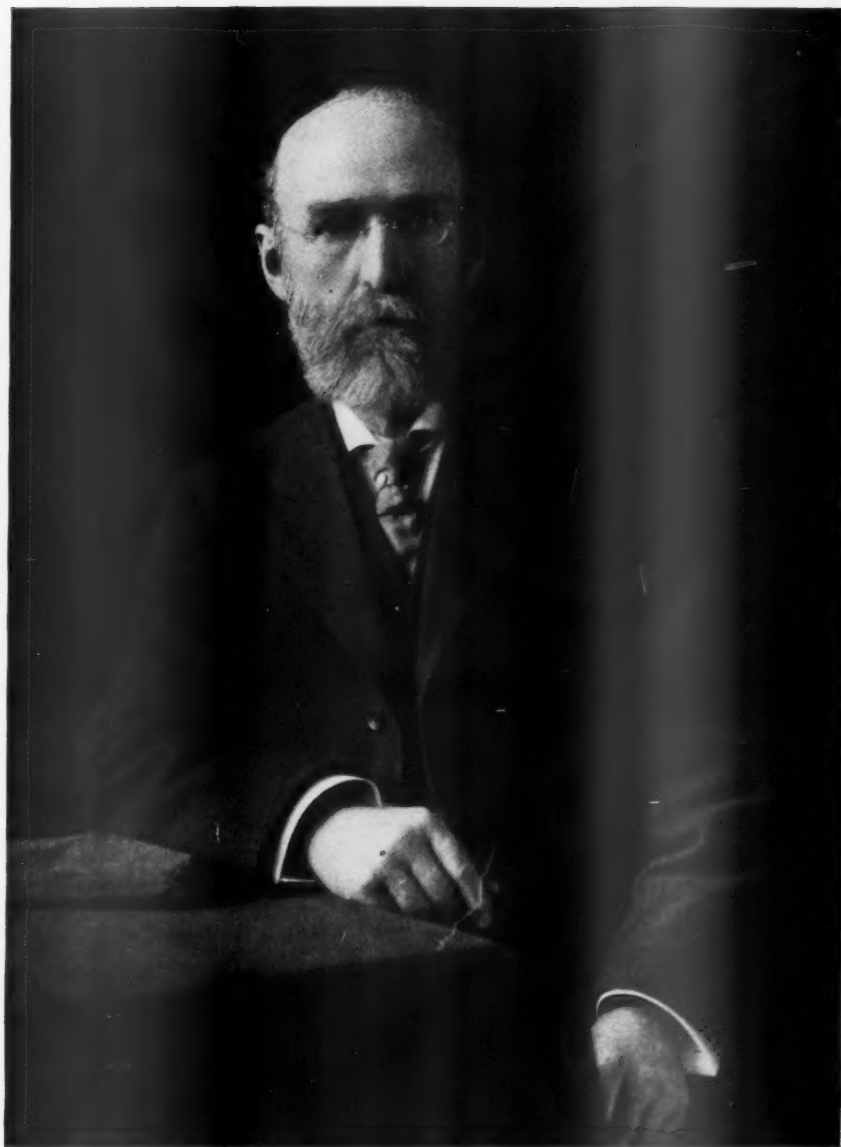
With all that the forestry movement has accomplished for woodlands in the country at large—valuation greatly increased, economy promoted, a general attitude of thoughtfulness brought about—it is on the whole a disappointing impression which has been made on the actual management of privately owned lands. There are good reasons, on one side and on the other, why progress should be slow here. On the side of the land owners fire risk and the tax burden are hindering the adoption of conservative, foresighted management while that able young foresters have not engaged more largely in the work is due to the wonderful opportunities that were open elsewhere. Men who are in the swing of the development of the national forests, guiding legislation in the states, or laying the foundations of American forestry science could not be expected to turn aside to less attractive looking work.

This is all easy to understand and the fact that forestry has thus far made no closer connection than it has with business would excite no comment if the profession had not professed all along to be doing that very thing. But we have for years past proclaimed ourselves as teachers and missionaries to the lumbermen. We have been profuse with co-operation and advice; occasionally a man has gone with a business concern for a few months to show them how to do it, and large claims have been periodically made for the results attained. Time and reflection, however, show these claims to be mainly hollow. Candid foresters today admit that it is a discredit to the profession that so little privately owned land is under their control, and the lumberman, while he grants the soundness and final necessity of the forestry idea, says that as for the actual application of forestry principles to his own property and operations they have got yet to show him. Yet it is forestry in business, good management of the vast area of woodland owned by private individuals and corporations, that really spells abundant timber supplies in the future. Further, since voluntary, co-operative methods are far simpler and cheaper than government ownership or regulation of cutting by law it is up to the forestry profession fully and carefully to work this lead out. There is indeed a vast and important work to be done here. As the proclamation of the national forests and the beginning of their administration was the big work in forestry in the last fifteen years, so the sifting out of all the possibilities of good forestal and financial management on private forest lands is likely to be the big work of the next fifteen.

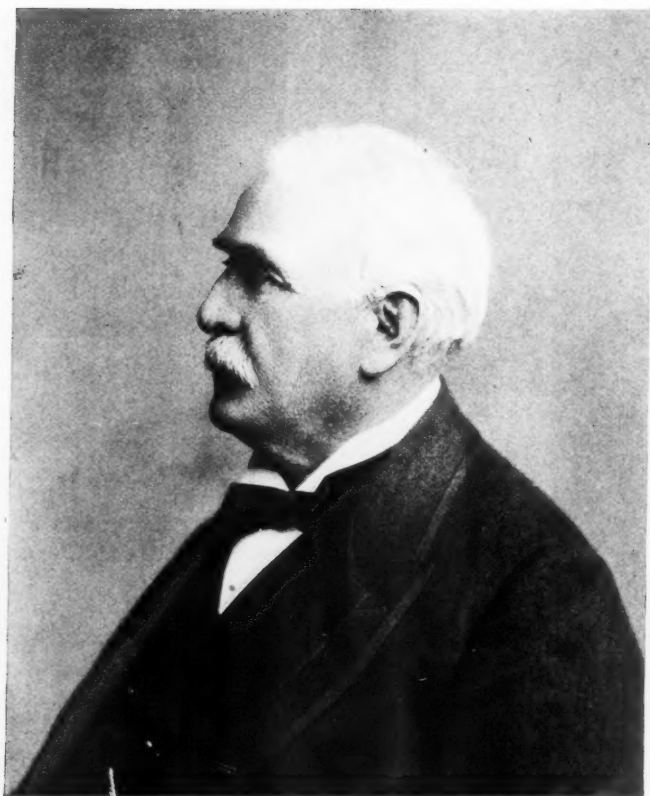
FORESTRY AND LUMBERING

A main reason why forestry has made no more vital connection than it has thus far with lumbering appears to the writer to lie largely in a stilted and overstrained conception of the terms forestry and forester. If so the direct, practical conception outlined some pages back, of the forester as the man in actual control and management of forest land, will serve as an antidote. So far, however, we have strictly denied the application of the term to any man who, outside of the National Forests and certain enterprises and pieces of land, stood in any such relation to forest property. For this course there may indeed have been good and sufficient reason in the past, but it is clearly hampering progress today. Business in large measure is now hospitable to forestry, genuinely seeking to understand its principles and find out how they may be applied, and the most cordial, thoughtful co-operation is due from the forestry profession. To that end, however, more vital contact and mingling is essential. Business men know, if foresters do not, that men standing outside of business cannot get a thoroughly effective point of view and are bound to miss essential points. There is a limit beyond which the missionary spirit will not go, when comradeship and appreciation must come in or progress will stop. The true economic condition of the country requires recognition in a toning down from theoretical ideals to the standard of what can actually be done. In a word it is forestry on the level of business, foresters inside of business organizations, and not outside, that from now on will actually do the work.

In maintaining the present unsatisfactory condition the schools have



DR. CHAS. R. VAN HISE, PRESIDENT, UNIVERSITY OF WISCONSIN. ELECTED A VICE-PRESIDENT OF THE AMERICAN FORESTRY ASSOCIATION.



CAPT. J. B. WHITE, KANSAS CITY, MO., PRESIDENT, NATIONAL
CONSERVATION CONGRESS. ELECTED A DIRECTOR OF
THE AMERICAN FORESTRY ASSOCIATION.

had their share along with the rest of us. Founded on European models, located at intellectual rather than business centers, under obligation first and in any case to teach the principles of forestry, science and policy which the country so much needed, with a teaching force young, very limited in its knowledge of actual operations in mills and woods, the schools could not in fairness probably be expected to get to the bottom of these matters and give their students an effective point of view. Teachers could explain how land ought to be stocked in order to produce to the utmost; they could recount the steps in the different silvicultural systems; they could explain the interest of the community in the maintenance of forest cover and productiveness, and tell how under European governments that was secured; they know the forms gone through in making a Forest Service timber sale, and even had the supervision of some pet pieces of land. But American lumbering as it exists in the country today they have felt no kinship to and no obligation really to study and understand. As for woods operations the schools have apparently failed to see the fundamental fact that they are nine-tenths engineering. Courses of instruction in lumbering methods have been late, superficial and unsympathetic.

In consequence the men attracted to the forest schools have seldom been of the type to make or to co-operate with lumbermen, or if they were such at the start their forestry training likely spoiled them for any such work. Thus while lumbermen have been employing graduates of colleges and technical schools in various departments of their business, the majority of those who have had experience with forest school graduates simply say that they cannot be used.

If the view above expressed, that forestry had less effect in lumbering than it might have had, is true in the main, there are enough exceptions not merely to prove the rule, but to indicate the way in which more effective work may be done. The foresters now employed as secretaries to lumber dealers' associations have opportunity in a quiet way to exert a great deal of influence and there is every reason to suppose that they do. A number of men with more or less forestry training now have positions with lumber or pulp concerns in Canada. The more careful and responsible timber estimating of New England is fast coming into the hands of foresters, and recently a trained forester in an important case for damages caused by railroad fires, by means of scientific estimates, beat a whole array of Maine woodsmen into their boots. On the Pacific Coast a number of trained men are succeeding at timber estimating or as forest engineers. The Yale School of Forestry now advertises an elaborate course in lumbering connected with its regular forestry work. Lastly we have the Biltmore School, taking the sons of lumbermen and others going into the lumber business, and giving them a practical training with as much of an insight into forestry science and policy as such men will stand.

The point in the above is this—that the men above mentioned are not doing academic work merely, but are making vital connection between the two things, lumbering and forestry. They are getting actually to bear on our forest resources. If they are not anywhere bringing about the ideal they are actually improving things to some extent and putting themselves in a

way to attain later positions of actual command. On the other side moreover, we should not by any means neglect the recent movement among lumbermen, most prominent in the South and on the Pacific Coast, to cheapen their work and put it under system in ways similar to those by which other important lines of production have long been managed by engineers.

Here indeed is believed to be an indication of the way in which forest schools may greatly help themselves and at the same time powerfully serve the present and future needs of the country. With increasing values of land and timber and the growing complication of lumbering operations, the helter-skelter methods of earlier times in the lumber business are no longer economically sound. Lumbermen realize this, are studying and systematizing their operations and are ready to revise them on any lines that are economically and financially sound. To do this work is calling yearly for men of larger capacity and better intellectual equipment to serve as expert cruisers, logging engineers and managers of plants and concerns. Here is the opportunity of the schools—to supply men of fit training for this important work who have an insight into the principles of forestry as well. Business will eagerly welcome such men for what they can do now, and when they have proved their capacity and judgment in lines that are familiar will give them freedom also in lines which are new. Such work as this will require sturdy, calculating men with no sentiment about them, and the work itself will hardly be recognized as forestry by some who in the past have been arbiters of opinion; but forestry it is in our circumstance and time. It is not surrender of or disloyalty to principles; it is just putting those principles into a form such that in our day and generation they can actually be used.

To review again, in this branch of the subject—the forest schools as yet have failed to master American lumbering technically; they seem not to have understood its economic necessity and limitations, and they have not sympathized with it as they might. To continue on this line, teaching “forestry” as they conceive it, which the lumberman may take or leave as he sees fit, is dignified certainly, but is not so co-operative and profitable an attitude as can be conceived. There will always certainly be a field for just this kind of work and fundamental principles will have to be taught even more thoroughly than they are today. But some, both lumbermen and foresters, who have thought the matter over, think it ought to be supplemented with training for a different purpose and with the weight of instruction changed. They believe that schools well located and well equipped that will furnish a training strong in engineering lines, including a comprehensive view of lumbering methods, and at the same time, through hard, compact, fundamental teaching, give their students an insight into silvicultural principles and forest policy, will make their own fortunes and do a great work for the country as well. Their graduates will go into actual business and soon win their way to executive and financial command. They will organize lumbering work as other lines of production have been organized by engineers, securing great economies thereby. They will introduce conservative, foresighted management progressively, as it becomes practicable. They will be the best possible safeguard and buffer if ever the time comes when it is necessary to regulate lumbering operations by law.

THE PRESENT SITUATION IN FORESTRY*

By HENRY S. GRAVES
CHIEF OF THE FOREST SERVICE

I AM reminded today of the luncheon given by the American Forestry Association just eleven years ago which I attended and at which I believe I discussed the problem of state forestry with special reference to New England. If I recollect correctly the subject of the need of federal forests in the eastern mountains was also discussed at that luncheon. During this period of eleven years the forestry movement has advanced far beyond the expectations of any of the men engaged in the work at that time. Today we find that there is an exceedingly favorable public support of the principles of forestry throughout the country; a policy of national forestry has been definitely established; many states have initiated a vigorous policy of public forestry; and we have already several hundred trained foresters in the country as a nucleus of a profession to carry on the work. It is certain that we may be gratified with what has been done, and to this association is due appreciative congratulations for the part it has taken in all this development.

So much has been done in a short time that it has appeared to some that the principal task has already been accomplished. This is very far from being the case. Only the first steps have been taken and the chief work of getting forestry into actual practice still lies before us. This is true of the work of the practicing foresters; it is equally true of the work of this association. The association has served most usefully for a period of thirty years; its greatest usefulness is in the work it may do now and in the future. The situation has changed only in this respect that with the foundations of a favorable public sentiment already laid, the association can now do far more effective work than it ever could do in the past, in the promotion of the practice of forestry throughout the United States.

THE WEEKS LAW

The most conspicuous incident in national forestry during the past year has been the passage of the so-called Weeks Law, authorizing the purchase of forest lands which lie upon the watersheds of navigable streams. Heretofore the problem of the National Forests has concerned the administration of property already owned by the Government. The Weeks Law is of great importance, not only because of the direct results which will be obtained through the establishment of National Forests in the East, but also because it still further strengthens the whole policy of national forestry. It is a direct recognition of the interest of the public in the proper handling of forest lands situated in mountain regions, and a recognition also that the

*Address by Henry S. Graves, at the Annual Meeting of the American Forestry Association, Washington, D. C., January 9, 1912.

participation of the public itself is necessary to accomplish the establishment of forestry in practice.

While the Weeks Law does not specifically designate the areas within which purchases are to be made, it is understood that it was the intent of Congress that there should be established, if possible, National Forests in the White Mountains and in the Southern Appalachians. It is not expected that all of the areas upon which it is desirable that there should be practical forest conservation can be purchased by the Government. It is expected, however, that, even with the appropriation already made, a number of National Forests can be established on important watersheds which may serve as centers of forestry and which will aid in bringing about the protection and better handling of the surrounding country. One of the first steps which will be taken after the establishment of one of these forests will be an effort to establish through coöperation organized fire protection in the area surrounding them. Since the passage of the law a large number of offers of lands have been made to the Government, and already examinations have been conducted on 500,000 acres by the Forest Service and Geological Survey. The mere offer of lands and subsequent examination does not, however, necessarily mean a purchase. The examination includes a consideration of it as a desirable property for the Government from the standpoint of the purposes of the law, and a careful appraisal of the value of the land. It frequently happens that the owner of the property and the agents of the Government do not agree as to its value. I have no doubt that some people may be impatient on account of the failure of the Government to purchase certain areas, when the reason for this failure is the fact that the price proposed by the owner is excessive. It is, however, expected that there will be no great difficulty in acquiring lands both in the White Mountains and in the Southern Appalachians, whose administration in the long run will have an enormous influence on the development of forestry throughout the regions in which they are located.

In the development of a National Forest policy it has consistently been recognized that one of the purposes of public ownership and control of forests is to insure the benefit of their protective influence in preventing erosion and their effect on streamflow. In some of our National Forests the protective value exceeds the timber value, as, for example, those in southern California. The same idea is dominant in developing a policy of purchasing National Forests in the East. In fact, the only legal ground on which the purchase of forest lands can be made, according to the interpretation of the authority of Congress by the Judiciary Committee of the House, is to protect navigable streams.

PROTECTIVE INFLUENCE OF FORESTS

In the development of National and State forest policies questions have frequently arisen in regard to how far the influence of forests on streamflow, on rainfall, and on erosion extends. Some have gone so far as to doubt this influence almost altogether. Much of the confusion regarding the influence of forests on streamflow has arisen from the failure to recognize that the



CHIEF FORESTER HENRY S. GRAVES, ELECTED AS VICE-PRESIDENT OF THE AMERICAN FORESTRY ASSOCIATION.



DR. FILIBERT ROTH, DEAN OF FORESTRY, UNIVERSITY OF
MICHIGAN. ELECTED A VICE-PRESIDENT OF THE
AMERICAN FORESTRY ASSOCIATION.

vegetative cover of a given watershed is only one of a number of important factors governing the flow of water. There has been so much discussion of this subject and the position of the foresters has been so repeatedly misinterpreted that I shall digress from my main subject for a moment to state my own position in the matter.

First, the quantity of water in streams, and the regularity of their flow, are affected by precipitation, temperature, topography, vegetation, character and condition of soil (including cultivation, etc.), and rock character and position. The interplay and relative importance of these factors vary greatly in different localities and regions. In general, the most important of them all is the amount, character, and distribution of the precipitation.

Secondly, ample evidence is furnished by prolonged European experiments and investigations of unimpeachable scientific authority, as to the fact that a forest cover exerts, under most conditions, a very important influence upon streams. This influence, however, has a limit and may be overbalanced entirely by other factors, such as heavy rains and sudden thaws. Forests can not, under prolonged precipitation or other exceptional conditions, prevent large floods, but they tend to diminish both the number and the violence of floods.

Thirdly, while forests transpire, and growing forests consume more water than other forms of vegetative cover, and so may lessen the aggregate volume of stream discharge in the course of a year, they tend to make more water available by regulating this discharge and by modifying the distribution of rainfall.

Forests regulate stream discharge (a) by converting surface run-off into underground seepage, and (b) by checking erosion.

Forests convert surface run-off into underground seepage by checking the force and prolonging the period of rainfall, through the action of the tree tops, and by accumulating snow and retarding its melting; by checking surface run-off through the action of roots, leaf litter, twigs, and fallen trees; by shortening the period during which the ground is frozen and impermeable to water, and by creating and maintaining a permeable and absorptive soil.

Forests check erosion by the same means by which they convert surface run-off into underground seepage, and also by the binding effect of tree roots upon the soil. The less the volume of water which runs over the surface of the ground, and the more slowly this water moves, the less is its wearing effect. On steep slopes, or on friable soils, surface run-off creates gullies, torrents, and consequent rapid and permanent physiographic change.

The results of forest destruction are both to make run-off progressively more sudden, tending to increase the violence of floods, and to load the streams with silt and coarser material. The degree to which the removal of forests or any other vegetative cover increases erosion varies according to the completeness of its destruction and its recuperative power.

The conversion of run-off into underground seepage and the checking of erosion are the two essential forest influences which act together to control flood conditions.

ADMINISTRATION OF THE NATIONAL FORESTS

Aside from the Weeks Law there has not been any striking legislation touching national forestry during the year. There has, however, been very great progress made in national forestry, especially in the administration and protection of the National Forests. We have now reached a point where the first work of initiating the administrative machinery has been completed. The general lines of new policies have been established, and the work now consists of developing the details of these policies in actual application on the ground. We now have an organized administrative force and our work consists of the protection of the Forests, the conduct of the local business, and developing the Forests for their highest usefulness as rapidly as possible. This is work about which the general public hears but little. It is, however, the work which counts, and in which during the past year the Forest officers on the ground have been making great forward steps. This is well demonstrated by the results in protection from fire during the past season. In spite of the fact that certain sections of the West, particularly in Oregon and part of the Central Rockies, were as dry as in the previous year, nevertheless the record is the best of any since the establishment of the National Forests. Over 2,000 fires were started, and all were put out. Only a few single fires did any substantial damage. While these good results in fire protection were due in part to a better season from the standpoint of the distribution of rainfall in most parts of the West, they were also due to a more complete organization of the protective force; to a better equipment of the foresters for attacking fires; to the increase in trails, lookout stations, and other improvements; and to a more favorable public sentiment.

We have, however, still our greatest task ahead of us, for it must be remembered that most of the National Forests are still great undeveloped wildernesses without adequate means of transportation and communication. Every year we are building, as rapidly as available funds permit, roads, trails, telephone lines, lookout stations, and other improvements necessary for protection and administration. It will, however, require fully 15 years at the present rate of expenditures to complete the primary system of permanent improvements needed for protection. Every year we are going to have a hard fight with the fires, so that our greatest problem is now, and will remain for a long time, that of protection. With the continued support of Congress there will be a steady development of the Forests in a way to meet the needs of the people dependent upon them both from the standpoint of the present and the future.

PROGRESS IN STATE FORESTRY

A very great obligation rests also on the State governments in working out the problem of forestry. Only a few States in the entire Union are as yet fully meeting this obligation. The great problem of the States in forestry today is to bring about the protection and proper handling of private forests. Organized fire protection under State direction, establishment of a reasonable system of taxation of growing timber, conservative management of State forest lands, education of woodland owners in methods of forestry, and such

practical regulation of handling forests as may be required for the protection of the public,—these are problems requiring immediate action in all States.

During the past year there has been more real progress in State forestry than in any previous year. The feature which stands out most strongly is that a number of States have gone beyond merely passing forest laws, but have begun to provide the money necessary to achieve practical results.

The principal work in the different States has been directed toward fire protection. At length it is realized that the prevention of fires is the fundamental necessity, and that this can only be accomplished by having a thoroughly organized State Forest Service. Excellent laws are being passed in various States looking to the removal of the causes of fires, as restrictions placed upon railroads to prevent fires from locomotive sparks, regulations regarding the burning of brush, carelessness of campers, etc. But these laws are ineffective unless there is adequate machinery to carry them out. A fundamental principle of fire protection is preparation. A forest region must be watched for fires, both to prevent fires from being started and to reach quickly and put out such fires as may start.

The new State legislation recognized these principles and already fully twelve different States have inaugurated a measure of fire patrol or watching under State direction.

Still another element has been introduced into State forestry—namely, restrictions upon lumbermen to make a proper disposition of their slashings, in order that the lumbering may not be a menace to the surrounding forests.

The scope of this paper does not permit of an analysis of the various laws recently passed in different States. Special attention may be directed to the new forest laws of Minnesota and Oregon, and to the organizations which are being developed. Important new laws or amendments to old laws have been passed also in Maine, Vermont, New Hampshire, Massachusetts, New York, Maryland, Michigan, Wisconsin, Montana, Washington, and Louisiana. The new Conservation Commission established in California promises to lead to important results in forestry and other branches of conservation. Illinois has made a beginning, making an appropriation to study the conditions of the State looking toward the development of a system of State forestry. Several States have made a beginning in forestry through their State institutions, as in Colorado and Missouri. Idaho and South Dakota have entered upon a policy of exchange of lands with the Federal Government, which will lead to the consolidation of the State forest lands and the establishment of a State forest, a move which I hope will be followed by other States having similar holdings.

While the record is good in some States, there are still many which are doing nothing whatever in forestry. Under the provisions of the Weeks Law the Federal Government may assist a given State in the protection of forests lying at the source of navigable streams, provided that State has established and is supporting a system of fire protection. Such assistance has been given during the past season to Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New Jersey, Maryland, New York, Wisconsin, Minnesota and

Oregon. Most of the other mountain States can not receive this assistance because they are not themselves making proper provision for fire protection under State direction.

PROGRESS IN PRIVATE FORESTRY

The real advance made in private forestry during the past year has been in fire protection. Woodland owners are coming more and more to realize the damage done by forest fires, and are taking action on their own initiative to secure better protection. Taking the country as a whole, the damage by fires is becoming more and more localized. There have been, for example, during the past summer, very serious fires in certain localities, chiefly in centers of prolonged drought. But the number of disastrous fires is decreasing and they are not as widely distributed as formerly. The average farmer is today endeavoring to keep fire out of his woods, so that the damage to the small woodlots has been very greatly reduced. Among the large timber tracts the situation is also better than ever before. Not only have the individual private owners in many sections increased their efforts in fire protection, but there has been an extension of the idea of co-operative fire protection among owners of contiguous lands. The work of the fire protective associations is from year to year more effective as the organization is perfected and the force gains experience. An important factor in the fire protective work on private lands has been the increased assistance given by the states and by the Federal Government. The problem of fire protection on private lands is as yet by no means solved. The great gains during the last few years, however, show that in certain regions at least we are on the road to gaining mastery over the worst enemy of the forests.

Protection from fire is only the first step in forestry. Protection alone will not ensure the continuance of forest production. Without the use of forestry methods, ordinary lumbering results in a continued reduction of growth of valuable species.

The problem of forest production is making advances only in those regions where there is a good market for forest products. In such regions, as for instance in New England, the woodland owners are coming more and more to adopt careful methods of cutting, and in a great many instances are planting trees.

On the other hand, the handling of large timber tracts with a view to continued forest production has made but little progress. The number of large owners doing any work in forestry beyond fire protection is exceedingly small, and very few of them see any prospect of much being accomplished by them under the present conditions.

The problem of the large owner is a peculiar one. Ordinarily, he has purchased the land for the merchantable timber upon it and does not expect to retain ownership of the property after cutting. He usually has no special plans regarding the future disposition of the land. He may hope to sell a portion of it for agricultural development; the balance, which is unsuited to agriculture, he will dispose of in whatever way will bring in the greatest

returns. But there is seldom any idea of holding a considerable portion of the land for the production of new crops of timber.

The problem of the permanence of use of land for forestry is fundamental. The average owner does not make investments in forestry on lands which he does not expect to hold for this purpose, or which will not have an increased value for sale later on by reason of his investment. Wherever there is a measure of permanence in ownership of forest land, forestry becomes a practical business proposition. Forestry requires a consistent policy of use on account of the length of time needed to produce a crop of trees. Land subject to speculative holding does not attract investments in forestry, because the element of stability of policy in use for forest production is lacking.

It is estimated that our private forests comprise some 350,000,000 to 400,000,000 acres. About one-half this area is in small holdings, much of it comprising woodlots attached to farms. The farm woodlot presents very favorable conditions for forestry. A good woodlot is a great asset to any farm. Ordinarily the area devoted to the woodlot is not suited to agriculture and will be left to tree growth. It is just as much to the advantage of the farmer to maintain the productiveness of his woodlot as the productiveness of his fields, not only for his own benefit as long as he owns the property, but because of the enhanced sale value of the farm. Public education and demonstration of the practice of forestry will go far to meet the woodlot situation.

There are also some large lumber companies which are organized on a basis of permanence, which expect to hold their lands for successive cuttings rather than to strip them and then either dispose of them or allow them to revert to the State for taxes. For such large owners forestry is a necessity.

We have therefore the very small owner and the very large owner in the best position to practice forestry. The reasons are the same in both cases, namely, that there is a permanent tenure of the land.

The problem most difficult of solution and in which the least progress is being made concerns the holding of the average lumber company. We may assume that a small portion of this land will be absorbed by the Government and the states as public forests. A portion also will be found after cutting to be chiefly valuable for agriculture and will be used for that purpose. Such areas may in the present discussion be left out of consideration.

The first necessary step is to remove the two greatest obstacles in the way of private forestry—namely, risk from fire and an unfair system of taxing growing timber. This can only be accomplished by the action of the public through State agencies. This action will in itself encourage the holding of land for timber production.

The public will, however, not be satisfied with a mere encouragement of forestry, if it makes investments in fire protection and concessions in taxation. It will very properly demand that the private owners do their part not only in preventing dangerous slashings in their operations and also in continuing good productive conditions on those lands not suited to agriculture.

Already several states have introduced the principle that the slashings after lumbering shall be so disposed of as not to be a menace from fire. It is

inevitable, in my judgment, that there will be an exercise of a greater measure of direction by the public over private forests than is now the case. I look for the time when the states will designate certain lands as *Protection Forests* within which the cuttings must be made with a view to the continuance of the forest.

It is commonly said by land owners that forestry is not practical. This is usually due to the fact that they do not fully appreciate just what forestry requires and what would be gained by it. As a matter of fact, the practice of forestry would in a very large number of cases not only be practical, but would result in a considerably increased return to the owners. The time has come when lumbermen should make an actual beginning of forestry on their own lands, even if the first work is purely experimental.

ACTION BY THE IRRIGATION CONGRESS

MAKING cognizance of the importance of forest preservation, the National Irrigation Congress, which met in Chicago, devoted a portion of its resolutions to the subject, as follows:

Recognizing the close natural connection between forests and stream-flow, especially throughout the irrigable region, we heartily commend the Federal forest policy and favor its continuance and extension; and we reaffirm our full confidence in the high integrity and exceptional intelligence of the past and present officers of the United States Forest Service.

Approving the progressive withdrawal of lands suitable for homesteads from the National forests, we hold that such withdrawals should be made in the light of expert investigation showing that the agricultural value of such lands is paramount to their value both for forest production and for stream protection.

We favor the enactment by all states of laws to regulate the cutting of timber on State and private lands, and laws reforming taxation on timber lands, cut-over lands, and reforested lands, to the end that the perpetuity of the forests may be assured and the flow of the streams be preserved.

We approve, and direct our Senators and Representatives in the Federal Congress to support, the Burke Bill (H. R. 14085) reappropriating and rendering available the lapsed portion of the sum appropriated to provide for the Appalachian and White Mountain Forest Reserves in accordance with previous recommendations of the National Irrigation Congress.

The India Forester, published at Dahra Dun, U. P., India, impressed with the article on fighting forest fires in a recent number of American Forestry publishes a goodly portion of it, with special reference to the value of the telephone in giving warning of forest fires.

One of the American consuls in Europe reports that with the exception of the forests of the Mississippi Valley and those of the Asiatic Caucasus the oak forests of Slavonia are without equal.

THE ANNUAL CONVENTION

MEMBERS of the American Forestry Association present at the thirty-first annual meeting of the association at the New Willard Hotel in Washington on January 9, 1912, declared that it was one of the most successful and enthusiastic meetings that the society has ever held. There was a gratifyingly large attendance, and at the director's meetings in the morning and afternoon, and the general session in the afternoon following the luncheon, much important business was transacted, while in the evening, at the smoker given at the Commercial Club by Mr. Otto Luebker to members of the association and members of various government departments, there was a valuable interchange of ideas and expressions of opinion.

At the morning session of the board of directors, with Governor Robert P. Bass, the president, in the chair, there were also present Charles Lathrop Pack, of New Jersey; E. A. Sterling, of Pennsylvania; Prof. Herman H. Chapman, of Connecticut; Otto Luebker, of the District of Columbia; Chester W. Lyman, of New York; C. F. Quincy, of New York, and Frederick S. Underhill, of Pennsylvania. The minutes of the last meeting were approved, and the treasurer's report accepted. The finance committee, which is raising funds for the association, was continued and its report accepted. The auditors' report was received and other routine business was transacted preliminary to the general meeting in the afternoon.

The luncheon was served in the main ball-room of the New Willard at 1.30 in the afternoon, there being a distinguished assemblage of members and guests. The room was elaborately decorated with palms and greens and the tables with flowers, the general effect being most attractive. There were ten tables, seating eight each, and all were filled. An excellent luncheon was served and greatly enjoyed, and as soon as it ended Governor Robert P. Bass, of New Hampshire, the president of the association, called the general meeting to order.

Mr. Otto Luebker, the treasurer, outlined his report. He said in part: "The operations of the Association during the year ending December 31, 1911, show that, exclusive of voluntary contributions, our income met our expenditures within one hundred dollars. There is under way the raising of a ten thousand dollar fund to create a more ample working capital. The association has also been notified of a legacy of \$5,000 by Jane M. Smith, of Pittsburgh. The use of the income from this legacy is to be devoted to the creation of life memberships in the association."

President Bass appointed E. M. Griffith, of Wisconsin, Philip W. Ayres, of New Hampshire, and E. B. Grandin, of Pennsylvania, a committee on nominations, and this committee nominated the officers whose names appear in the first part of this magazine, and they were elected.

A committee on resolutions consisting of S. N. Spring, of Connecticut, Chester W. Lyman, of New York, and E. A. Sterling, of Pennsylvania, reported the resolutions elsewhere published, which were adopted.

Upon a motion by Mr. Kelsey, President Bass was authorized to appoint

a committee to investigate the question as to the advantages of state nurseries for the propagation, cultivation and sale of forestry material in competition with the business of private owners, and report at the next annual meeting.

Mr. Joshua L. Baily, of Philadelphia, presented a resolution relative to the chestnut tree blight, which was referred to the committee.

Amendments to the By-Laws which were adopted make changes providing that in the future, dues are payable upon election, and in each succeeding year upon the same date, and that officers of the association may hold the office also of auditors.

Mr. Luebker said: "As a fitting, though somewhat belated, testimonial to the memory of a former President of the United States, and a statesman who had done very much to foster the work along the line of forest conservation, I move that this association elect, as an honorary member for life, Mrs. Grover Cleveland."

This motion was greeted with applause and was carried unanimously by a standing vote.

Mr. J. L. Weaver, one of the newly elected directors, extended the welcome of the city to the visitors and expressed the city's appreciation of their presence.

The addresses by President Robert P. Bass and Mr. Henry S. Graves, Chief of the Forest Service, which were made during the meeting, appear elsewhere in this number, and the address by Dr. L. O. Howard, Chief of the Bureau of Entomology, will appear later.

Before the meeting adjourned, Mr. Charles Lathrop Pack, of Lakewood, N. J., a member of the board of directors, made a vigorous speech in which he spoke about the necessity of every member of the association working to aid the officers of the association, of going home and sending in half a dozen new subscribers and doing all in their power to advance the interests of the association.

After the general meeting, a meeting of the board of directors was held and routine work in connection with the duties of the directors was transacted.

In the evening over a hundred men assembled at the Commercial Club at the smoker tendered by Mr. Otto Luebker, treasurer of the association, and they had a most instructive and enjoyable time. A couple of hours were taken up in hearing short addresses about various features of the work of the association and in the interests of forest conservation, the addresses being by Governor Robert P. Bass, president of the association; Prof. H. H. Chapman, of the Yale Forest School, the moderator for the evening; Frederick H. Newell, Director of the Reclamation Service; F. H. Coville, of the Department of Agriculture; W. B. Greeley, of the Forest Service; William L. Hall, of the Forest Service; George Otis Smith, Director of the Geological Survey; J. G. Peters, of the Forest Service; Assistant Secretary of Agriculture Willet M. Hays; C. J. Blanchard, of the Reclamation Service; A. D. Hopkins, of the Bureau of Entomology; Overton W. Price, of the National Conservation Association; Commissioner Fred Dennett, of the General Land Office; Dr. David T. Fairchild, of the Department of Agriculture, and W. R. Brown, of New Hampshire.

After these talks, lunch was served and there was a general personal discussion of forestry and conservation work.

THE PROGRESS OF FORESTRY IN WISCONSIN

BY E. M. GRIFFITH
STATE FORESTER

The first forestry law of Wisconsin was passed by the legislature in 1903, but it was so loosely drawn that practically nothing could be done beyond setting aside some 40,000 acres on the headwaters of the Chippewa River as a nucleus for a forest reserve. In 1905 an entirely new forestry law was passed, its most important features being as follows:

1. The creation of an absolutely non-political State Board of Forestry.
2. The withdrawal from sale of all State lands in the northern portion, or timbered area, of the State, and the provision making all such lands part of the State forest reserve.
3. Giving the State Forester the right, after examination and upon approval of the board, to sell any State lands in the northern portion of the State, which either were found to be suitable for agriculture, or too scattered to be of value for a forest reserve, the proceeds of such sales to constitute a "Forest Reserve Fund," which should be used only for the purchase of lands to consolidate the reserves and for the improvement and protection of the reserves.

The passage of this act by including all State lands in the northern portion of the State, immediately increased the area of the reserves from 40,000 acres to over 300,000 acres, and through purchases of privately owned lands over 100,000 acres, at an average cost of \$3.00 per acre, have been acquired, so that the reserves today total some 425,000 acres, and prospective purchases will increase the total to about 475,000 acres. It is felt that satisfactory progress has been made in increasing the forest reserves from 40,000 acres to 425,000 acres in seven years, but Wisconsin has only made a good start as the State must have a reserve of at least 1,500,000 acres in order to protect the headwaters of the most important rivers; aid in supplying the wood-using industries with the timber which they must have, and to protect the beauty of the wonderful northern lake region that should annually bring millions of dollars into the State, through tourists, campers, hunters and fishermen.

The creation of the "Forest Reserve Fund" was a wonderfully wise move, as it has encouraged the sale and settlement of agricultural lands, and has given the forestry board a steady income with which to increase the reserves, and also provide for their protection and management. In order to further expedite the purchase of lands to block up the reserves, the legislature in 1911 made an appropriation of \$50,000 a year for five years, but this amount is entirely inadequate and must be largely increased.

What specific object has Wisconsin in view of creating her Forest reserves? The State is building up her reserves in some of the most northerly

counties, viz: Forest, Vilas, Oneida, Iron and Price, and within this area there is not only a wonderful lake region of over 1,200 lakes, but also the headwaters of four of the greatest rivers in the State, viz: the Wisconsin, Chippewa, Menominee and Wolf.

STATE FOREST POLICY

The State lands set aside for the reserves, as also the lands purchased, are not suitable for agriculture, being either too sandy, rocky or swampy, but these lands have grown some of the finest pine timber in the State, and all the young timber needs is protection from fire. The State forest policy then is looking to the accomplishment of the following points, viz:

1. The protection of extensive forests upon the headwaters of four important rivers. This together with the use of many lakes as storage reservoirs will tend to make the flow of these rivers unusually regular, thus preserving and even improving many waterpowers, which will become increasingly valuable, especially since Wisconsin has no deposits of coal.

2. Supplying the wood-using industries of the State with a considerable amount of timber, and thereby it is hoped keeping many of them within the State.

3. Preserving the forests in the beautiful lake region of northern Wisconsin will both protect and greatly enhance its present attractiveness as a resort region, for not only the citizens of the State, but of the entire Mississippi Valley as well. The value of such a resort region is not generally understood, even from the dollar view point, but the report of the bureau of labor of New Hampshire for 1905, shows that the resort business yielded in that year over \$10,000,000, and the report of the Forest, Fish and Game Commission of New York for the same year, states that it was over \$7,000,000.

4. The young timber on the reserves will be protected and denuded areas planted so that in future years the State will receive a direct and increasing revenue from the sale of mature timber.

If Wisconsin had been as wise as Canada and retained its timbered lands instead of selling them, the forester would have a going concern, and the timber would be his stock, which he would sell as it became mature, and thus be able to show a revenue at once. But Wisconsin chose in the past to sell its timberlands to anyone and everyone at a fraction of what their present value would be, and therefore the State must buy back the timberlands that it sold, only now thousands of acres have been cut over, and burned, and hence it will be many years before there will be much merchantable timber to sell. The bright side, however, is that much of the timber that was left is now, with increasing demands, becoming valuable. It is impossible to foretell what timber will be worth twenty-five or fifty years from now, but it is, at least, safe to say that it will be worth as much as it is today.

Taking into consideration the acreage of land within the forest reserves that contains virgin timber and that which is fairly well timbered, also the areas that contain only young growth and those that must be planted, it is not probable that in twenty-five years the State would receive a net revenue of over \$1.00 per acre, but at the end of fifty years this should have risen to



A PRIVATE CAMP IN THE FOREST RESERVE OF WISCONSIN.



BIG TROUT LAKE IN THE HEART OF THE FOREST RESERVE, WISCONSIN.

at least \$2.00 per acre. It should be explained that the revenue from firewood and all other forest products is included in this estimate, also the revenue from leasing camp and cottage sites, which will be very considerable. If then the State acquires a forest reserve of 1,500,000 acres, it should be able to count on a net annual revenue of \$1,500,000 after twenty-five years, and of \$3,000,000 after fifty years.

CREATION OF STORAGE RESERVOIRS

Wisconsin has adopted the policy of allowing river development companies under the most careful State supervision to use many of the lakes at the headwaters of the Wisconsin and Chippewa rivers as storage reservoirs, so as to hold and store up the excess or flood waters, and then draw upon the reservoirs in times of low water when the water powers upon these rivers are in great need of more power. No new storage dam can be built without the consent of the State Board of Forestry, and the board also controls the level to which the water may be raised or lowered, so that the beauty and attractiveness of these lakes for summer camps and cottages will always be carefully protected. With a large forest reserve surrounding these lakes and thus preventing the deep snows from melting too rapidly, and the lakes as storage reservoirs holding back the spring freshets, the streamflow of the Wisconsin and Chippewa rivers can be systematically regulated, and thus the water powers will gain enormously from a constant and even flow. Wisconsin has gone much farther than the other States in developing a definite policy looking to the full development of storage reservoirs and the forest reserves will always protect the reservoirs from silting up.

WOOD USING INDUSTRIES

In 1910 a study of the wood-using industries of Wisconsin was made in co-operation with the Forest Service, and the main points brought out in the investigation are shown in the following short summary:

Statistics covering the production of lumber and other products of the saw mill and woods of the United States are compiled and published annually by the bureau of the census in co-operation with the Forest Service. In 1860 Wisconsin ranked seventh in the list of States arranged according to the quantity of lumber produced. Ten years later fourth place was occupied, third in 1880, second in 1890, first in 1900 and 1904, second in 1905, third in 1906, and fifth in 1907 and 1908. For the last mentioned year, figures were furnished by 899 saw mills in Wisconsin, reporting a total production of 1,613,315,000 board feet, or 4.9 per cent of the total output of all the mills in the country. Though showing a decrease in production in comparison with the figures of the preceding year, 1907, Wisconsin retained its relative position among the States for production. The cut of white pine in the State has decreased largely in the last few years, though this loss in production has been offset by the increased output of hemlock and hardwoods. The State ranked second in the cut of white pine, first in hemlock, third in maple, first in birch, basswood and elm, fifth in ash, and second in tamarack in 1908.

In view of the position of the State as a producing territory, the reports of the wood-using industries should be of much value both to lumber manufacturers and lumber consumers. The figures given in the report indicate the volume of each kind of wood grown both in and out of the State which is used by wood-consuming factories. A comparison reveals the importance to the dependent industries of perpetuating the home supply.

Chiefly by reason of its proximity to raw material, its excellent shipping facilities by rail and water, its geographical position in relation to consuming markets, and the existence of skilled labor, Wisconsin assumes an enviable position among the States wherein wood forms a large part of the manufactures. An inquiry into the wood-using industries of the Badger State reveals the fact that more than 930 million board feet of lumber valued approximately at \$20,000,000 is utilized annually in the numerous lines of manufacture carried on. This is but part of the lumber industry of the State, as the figures given do not include the vast volume of material turned out by the saw mills as well as other forest products which are not considered as raw material for further manufacture. The value of the raw material only is set forth; were the labor expended upon it and the cost of other materials with which the lumber is combined, included, however, the total value of the finished products would soar into additional millions. Of the 930 million feet reported, a little more than one-half of that quantity originated in the State. The figures by no means represent the total amount of wood used, as finished products such as staves and heading used by the cooperage trade and complete wheels and gear used in assembling carriages and wagons were not included in the investigation. Neither was there included in the totals the heavy volume of lumber that goes into flooring, ceiling, siding, and other products of the planing mill.

As will be noted from the above summary, more than 930 million board feet of lumber valued at \$20,000,000 is annually utilized in the wood-using industries, and that already almost 50% of this lumber is purchased outside of the State. This means that in time the State will lose its wood-using industries unless the rapid destruction of the forests is checked. A State forest reserve of 1,500,000 acres can aid very materially in supplying this raw material, though the State cannot, and should not be expected to do it all.

THE FOREST RESERVE AS A SUMMER RESORT

The State Board of Forestry has adopted the policy of leasing camp and cottage sites upon the shores of the beautiful lakes within the forest reserve. Owning several thousand acres of land upon the shores of some of the most attractive lakes in Oneida and Vilas counties, the State is easily able to meet all present demands and can lease sites to suit almost any taste.

From ten to twenty acres will be leased to one person or family and as much more to a club or association as they may really need. Leases can be given for a period of twenty years with the privilege of renewal and the yearly rental will vary from \$10 to \$50 according to the size of the lot required, its location and the amount of timber upon it. The contract between

the State and the lessee is very simple, merely providing that the lessee will cut only such timber as is marked for cutting by the forester, pay the local price for such logs as he may use in building, use all possible care in building fires, agree not to sell liquor on the premises or to sublet without the consent of the Board. For a small additional sum, merely sufficient to cover the cost, the forest rangers will look after a camp or cottage during the winter months, or while the owner is away.

The Forestry Board, however, have no cottages to rent, nor can they build cottages or sell the building materials, except logs from the forest reserve. Cottage sites will be leased not only to residents of Wisconsin, but of other States as well.

The forest reserve region should become in time a great summer resort for people throughout the entire Mississippi Valley, as it has a fine bracing dry climate, pine forests and sandy soil and is blessed with many of the finest chains of lakes in the entire country. Vilas County in particular has a greater area of water than land, and long trips can be made by launch or canoe. There is plenty of sport for hunters and fishermen and the resorts furnish good beds and excellent board at reasonable prices.

It would seem that there should be many families in the State who would like to avail themselves of this opportunity to secure an attractive site upon one of the lakes within the forest reserves. The Board is anxious to encourage the best utilization of the forest reserves as far as possible, and it is believed that the forest reserve region, especially in Oneida and Vilas counties is far more valuable for development as a great resort than for any other purpose, and if this area is protected and every thing done to make it attractive, it will mean lasting prosperity for all the residents of that section.

As ex-President Roosevelt has so well pointed out, the National forests as well as the forest reserves maintained by the various States are intended for the fullest and best use consistent with their protection, and one of the most natural uses to which a portion of the reserves should be put is as game preserves for all kinds of wild game.

As stated, the forest reserves in time should be used very extensively as a summer resort and by campers, hunters and fishermen. Much of the attraction of the reserves will depend on whether there is good hunting and fishing, and if these are provided sportsmen and tourists will spend a large amount of money in the State.

Wisconsin propagates through its fish hatcheries many kinds of fish to stock the waters, but so far the State has done nothing outside of enforcing the game laws towards maintaining or increasing the supply of wild game. Now that the State has a forest reserve it would not entail a great expense to enclose, say, 10,000 acres within a game proof wire fence and authorize the State Fish and Game Warden to use such funds as are available from time to time in stocking it. The area to be enclosed should include lakes and forests so as to have favorable conditions for raising such valuable fur bearing animals as mink, beaver and otter, game birds such as partridge and pheasant, also white and black tailed deer and possibly in time moose, caribou and elk. As the game increased it should be distributed in all parts of the

forest reserves and in other parts of the State where it should receive adequate protection. The area of the game preserve could easily be increased when necessary and one or two forest rangers could easily look after the game and still be able to attend to a good deal of forest work. It is hoped that the legislature will authorize the State Fish and Game Warden and the State Board of Forestry to co-operate in establishing and gradually stocking a game preserve.

FOREST NURSERIES

In the fall of 1910, the site for a large forest nursery was cleared at Big Trout Lake, which is in the heart of the forest reserve in Vilas County. In the spring of 1911, the seed was sown in the beds and seedling count made in September, 1911, showed that the beds contained the following number of seedlings:

White Pine	460,992
Norway Pine	579,312
Scotch Pine	198,960
Western Yellow	89,376
Norway Spruce	98,832
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Total seedlings	1,427,472

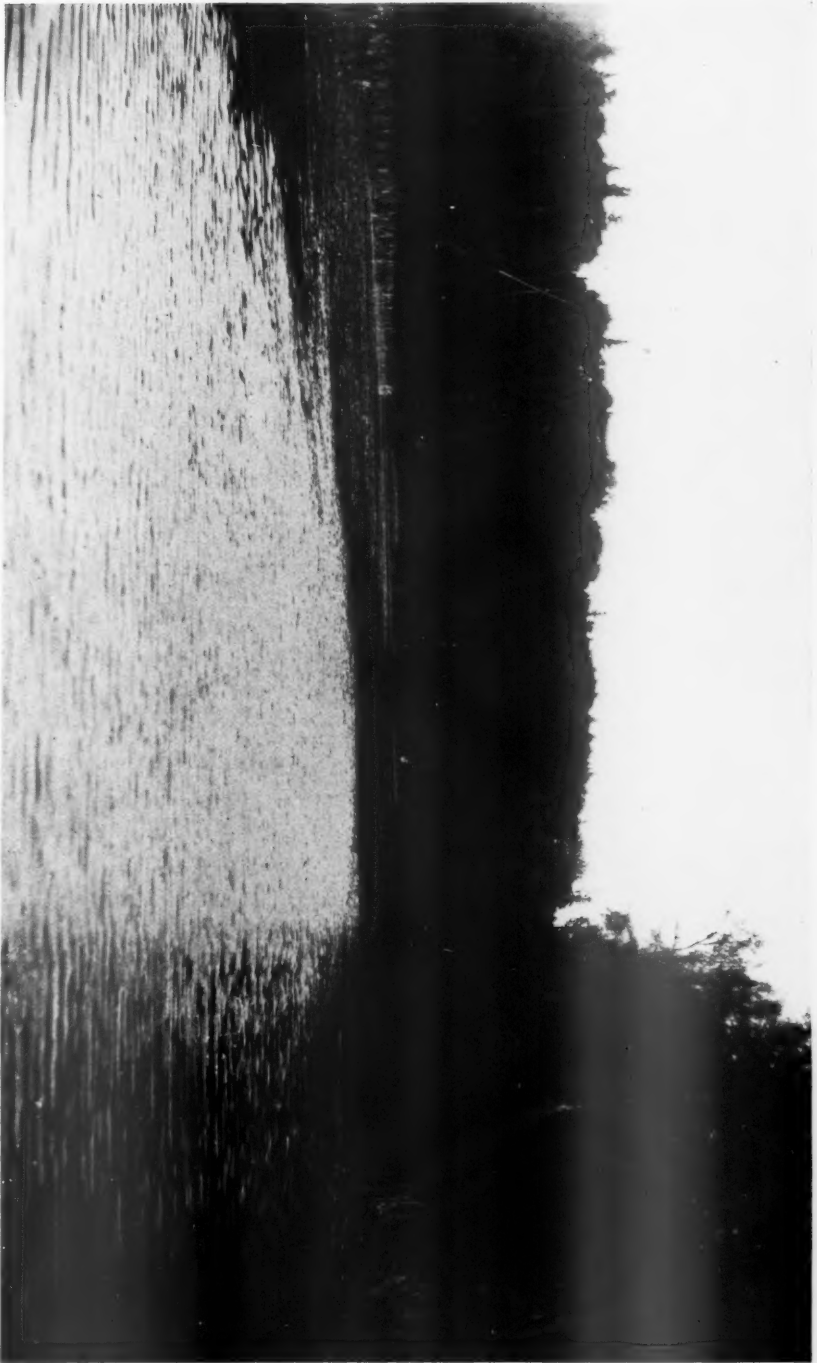
The entire nursery work has been done under the direct supervision of F. B. Moody, Assistant State Forester, and he has been very successful in raising strong, clean seedlings.

In May, 1911, the following transplants were purchased from the Forestry Department, Michigan Agricultural College, and set out upon denuded lands within the forest reserves:

White Pine	181,200
Norway Pine	1,000
Western Yellow	5,000
Norway Spruce	5,000
<hr/>	
Total transplants	192,200

The Western Yellow pine has done remarkably well, the plants being wonderfully hardy, and grow so rapidly that it is hoped this species will prove well adapted to the climate of Northern Wisconsin. Another large forest nursery will be established near Tomahawk Lake in Oneida County, and it is expected that within a few years the State will be in position to sell plants at cost to individuals and companies that may wish to reforest their cut over lands, which are not restocking naturally.

The College of Agriculture of the University and the State Geological Survey are making a detailed soil survey of the northern and less settled portions of the State, and it is thought that when the areas of non-agricul-



A REMOTE SECTION OF THE WISCONSIN FOREST RESERVE WELL ADAPTED FOR A GAME PRESERVE.



NATURAL REPRODUCTION OF WHITE AND NORWAY PINE ON CUT-OVER LANDS IN
WISCONSIN FOREST RESERVE.



FOREST NURSERY AT BIG TROUT LAKE, WISCONSIN, CONTAINS OVER 1,400,000
SEEDLINGS.

tural land are definitely determined that the owners will begin to seriously consider the protection of the young timber on such lands, and even planting them if this is found necessary.

FOREST RANGERS

In addition to cruisers who are employed in examining and valuing the lands and timber which are to be bought or sold, the board has a force of 12 forest rangers, who patrol the forest reserves to check the spread of any fire, and who are in charge of all improvement work in their respective districts.

The Forest Service, under the provision of the Weeks Law, has assisted the state during the past summer in protecting the forests upon the headwaters of navigable streams and 12 Federal patrolmen have been engaged in this work. Most of the rangers and patrols have had crews working under them and after heavy rains, when patrolling was not necessary, the work of building roads, fire lines and trails has been pushed as rapidly as possible, and through this work the timberlands, both state and private, are being divided into fairly small blocks, so that any fire can be held to a small area. The great number of lakes and streams within the forest reserve makes it a comparatively easy task to divide the timberlands into small blocks.

During the summer of 1911 over 78 miles of main roads were built on state lands and 32 miles on private lands, also 46 miles of fire lines on state lands and 40 miles on private lands. Twenty-five miles of telephone lines were constructed, dangerous slashings were burned on over 1,200 acres, and nearly all the old, dead stubs along the roads and fire lines have been cut.

Nearly all of the main roads have been built by utilizing old logging railroad grades. It is comparatively easy to remove and burn the old ties and then the grade is plowed and dragged with the result that not only is a good wagon road secured, but also a splendid fire line. Either houses or cabins are being built for all the rangers, and they will all be connected by telephone with the headquarters camp, and the nearest towns, so that in case of fire help can be promptly secured.

In addition steel look-out towers, from 40 to 60 feet in height, will be built on the highest points, and these towers will all be connected by telephone.

It is expected that most of the rangers will either have saddle horses or railway velocipedes in order to patrol their districts as rapidly as possible. Both the rangers and patrolmen have shown great interest in the work, and it is hoped that within a short time the University of Wisconsin and the forestry board will co-operate in establishing a forest ranger school, so that young woodsmen can be trained both for state work and employment by lumber companies, and large timberland owners as well.

UNLIMITED RAW MATERIAL FOR PAPER MAKING IN THE UNITED STATES*

By CHESTER W. LYMAN

ABOUT the year 80 A. D., according to an ancient chronicler, there was a great commotion in Rome because of the scarcity of papyrus. The authors of that day apparently feared that both their contemporaries and posterity would suffer because of an inadequate supply of material on which to record their writings. The present apprehension on the part of some persons as to the inadequacy in the United States of a supply of materials for paper-making is equally groundless and in the eye of the paper manufacturer is absurd.

FORTY PER CENT OF PAPER NOT MADE FROM WOOD

There appears to be an impression that almost all paper is made from wood and that there is such a scarcity of this material that the prices of paper have become inordinate. The United States Census of 1909 shows that about 4,200,000 tons of paper were made in that year—of this fully 40 per cent was made from rags, old paper, manilla, straw and other materials than wood. To a considerable extent all these materials enter into competition with wood-pulp for use in paper-making. More or less of each kind will be used according to their cheapness relative to each other and to pulp-wood. So, too, do the paper products made from these materials compete to some extent with the paper products of pulp-wood. Of course, for some purposes only paper made from certain kinds of raw material will answer, but in general pulp-wood has no monopoly of the situation, and the use as well as the price of pulp-wood is determined partly by the cost of rags, straw, and various other raw materials. About the only class of paper that is made altogether of wood is news print paper, which is only 28 per cent of the total production of paper. This 28 per cent requires 1,600,000 cords of pulp-wood or only 40 per cent of the total of 4,000,000 cords of pulp-wood used annually in the industry. The other 60 per cent of the wood comes into direct competition with other raw materials for use in making a large part of the remaining 72 per cent of the whole production of paper.

GREAT VARIETY OF WOODS USED

Of the 4,000,000 cords of pulp-wood used in 1909 in making about 60 per cent of the paper of all kinds, 40 per cent was poplar, hemlock, pine, cotton-wood, balsam, white fir, beech, slab wood and mill waste, and various other kinds of wood than spruce, which constituted the remaining 60 per cent of the pulp-wood used.

*From *The Protectionist* for January.

As other kinds of raw materials compete with pulp-wood so do other kinds of wood compete with spruce. It is largely a question of the relative cost although, of course, adaptability enters into consideration. This tendency for one kind of wood to replace another is strikingly shown by comparing the use of other kinds of wood than spruce in 1900 and 1909 respectively. In 1900 miscellaneous woods were only 24 per cent, but in 1909 they were 40 per cent of the total consumption of pulp-wood. Thus spruce wood has no more of a monopoly in the field of paper-making than pulp-wood in general has over other kinds of fibres.

Of all the paper made, approximately 40 per cent is made from rags, straw, etc.; 20 per cent from miscellaneous woods, and 40 per cent from spruce.

Of the 40 per cent paper made from spruce about the only class which is substantially made entirely of spruce is news print paper. Assuming that all news print paper is made of spruce, it would take 1,600,000 cords or about 66 per cent of all the spruce pulp-wood used, so that 72 per cent of the paper made only requires about 33 per cent or one-third of the spruce used. As a matter of fact other kinds of wood could be substituted very extensively for this 33 per cent of the spruce used in making all other kinds of paper than news print.

SPRUCE WOOD ONLY REQUIRED TO A LIMITED EXTENT

There is certainly no question as to the sufficiency of the supply of rags, straw, old papers, poplar wood, pine, hemlock, balsam, slab wood and mill waste, etc., of which 72 per cent of the paper is or could be made. The U. S. Department of Agriculture stated in 1908 that there are annually produced in the United States agricultural and industrial *wastes* suitable for making 35,000,000 tons of paper. It also said "practically all woods may be used for paper-making."

Thus the raw material problem resolves itself into the very simple question of the sufficiency of material for news print paper, *as at present composed*. It was assumed above that it is all made of spruce, but this is not strictly so. News print paper is composed, roughly speaking, of about 25 per cent sulphite pulp which is made from pulp-wood by a chemical process, and 75 per cent of ground wood-pulp which is made from pulp-wood by a mechanical process. Sulphite pulp used to be made almost entirely from spruce, but in recent years it has been found that hemlock, balsam, pine and several other kinds of wood make very good sulphite pulp, and 40 per cent is now actually made from such woods. There is very little doubt but that this 40 per cent will go on increasing and leave the spruce more and more for making ground wood-pulp. This is really the crux of the whole matter, as even today 54 per cent of the spruce used is made into sulphite pulp. Ground wood-pulp thus requires only 46 per cent of the spruce. This amounts to 1,124,000 cords per annum, and of this news print paper requires 1,000,000 cords, assuming that the ground wood-pulp is made wholly of spruce. In practice from 10 to 20 per cent of other kinds of wood are mixed with the spruce. Whether this percentage can be materially increased in future, as the result of

investigations now going on, is somewhat speculative, but it is not at all improbable that it can be; but under present conditions and those reasonably assured, the only question at all worthy of serious attention is whether we can continue to obtain 900,000 to 1,000,000 cords of spruce pulp-wood per annum at a price which will not unduly enhance the price of news print paper, or, in other words, the raw material for only about 24 per cent of the total tonnage of paper made.

PLENTY OF SPRUCE IN THE UNITED STATES

Granting that we need 1,000,000 cords per annum of spruce pulp-wood, let us consider the sources from which it can be obtained. We are now using annually 1,650,000 cords of spruce cut in the United States, but it has been shown that through the availability of other woods, 650,000 cords of this is not absolutely required for the purposes for which it has been used. The same may be said of the 800,000 cords of spruce imported from Canada. The wide natural distribution of spruce in the United States is indicated by the statement in the Government's report on "Forest Products of the United States" for 1909—that spruce lumber, lath and shingles were produced in thirty-two states, the principal ones being in order Maine, New Hampshire, West Virginia, Washington, New York, Vermont, Virginia, Minnesota, and Oregon. Thus it appears that the North-east, Central-north and North-west groups of States are all represented. Spruce is found along the whole Appalachian range as far south as North Carolina. Conservation of this species over this whole area would insure an adequate supply for all time to come. Ten million acres averaging a stand of growing timber of 5 cords to the acre or a total stand of 50,000,000 cords with an annual growth of 2 per cent would yield 1,000,00 cords a year perpetually. There is today at least that area, that stand, that growth and yield in the State of Maine alone.

COST OF SPRUCE LUMBER AND PULP-WOOD NOT EXCESSIVE

By themselves the pulp mills would be no drain upon the reproductive capacity of the spruce forests, but consumption for lumber must be reckoned with. Of the total cut in 1909 of spruce for all purposes, about 32 per cent was pulp-wood. There is thus a competition between the saw mills and pulp mills, although at least 25 per cent of the wood used for pulp is not suitable for saw-logs, being tops and crooked and defective logs which would otherwise be wasted. Notwithstanding this double demand for spruce, although spruce lumber has advanced in price 50 per cent in the last ten years, this is not much in excess of the average advance in the price of all kinds of lumber, viz., 38.2 per cent, and it is exceeded by many common species, e. g., yellow poplar, 81 per cent; hickory, 64 per cent; ash, 51 per cent; cypress, 53.6 per cent; cedar, 82.9 per cent; cotton-wood, 74 per cent; western pine, 58.7 per cent. There is plainly nothing unusual in the increase in the cost of spruce with respect to lumber generally, or for that matter almost every other commodity. Most varieties of lumber compete with each other for many purposes and this tendency to substitute one kind of lumber for another is

a guarantee that there can be no inordinate advance in the price of spruce lumber without decreasing the demand and consequently the competition with the pulp mill. Further than this all the lumber has formidable competition in materials suitable for the same purposes, such as steel and especially concrete for building, artificial board made from waste wood, and coal for fuel instead of fire-wood (the greatest single item of wood consumption). The prevention of forest fires (said to destroy more than the axe) and conservative methods of forest handling will also be important factors in safeguarding the future supply of lumber and hence of pulp-wood.

CONSERVATIVE LUMBERING BY PAPER MANUFACTURERS

Paper manufacturers, owning timberlands, are almost without exception conservative in handling them. As a concrete instance, the case of the International Paper Company may be cited. In its fourteen years of existence it has cut on all its lands in the United States less than two-tenths of a cord per acre each year, which is not in excess of the natural growth. On its lands in Maine, New Hampshire, Vermont, and New York there is thus standing today fully as much timber as in 1898. In addition to this limited cutting it has established a nursery and has done considerable replanting of previously denuded or burnt-over areas and abandoned farms. In general, replanting is not necessary for reproduction, limited cutting being sufficient, and this is the prevailing practice not only with paper manufacturers, but others owning pulp-wood lands.

GREAT DECREASE IN PRICES OF PAPER

The real problem confronting the paper manufacturer is not whether there is an ample supply of raw material, but whether he can continue to meet the insatiate demands of the publisher for cheap paper if labor, pulp-wood, chemicals, machinery, and almost everything entering into the cost continue to increase. For the past ten years he has succeeded by improving methods and machinery in holding the price almost stationary. Some kinds of paper are actually cheaper. Notwithstanding the false impression created by the newspapers in their agitation for free paper, news print paper on the average is not 10 per cent higher than ten years ago. Some of the great dailies used to buy below the general market; prices are now more uniform, and because these publishers are treated like their weaker competitors they do not like it. In 1885 the normal price of news print paper was \$100 per ton, in 1890, \$60 per ton, in 1900, \$43 per ton, and in 1911 from \$43 to \$45 per ton. In this last decade the cost of labor in the mills and of pulp-wood have advanced at least 50 per cent and many other items only to a less degree.

PUBLISHERS ASK SPECIAL PRIVILEGE

In the endeavor to meet this ever-resounding clamor for cheap paper, our manufacturers of newspaper have for the past ten years been importing from Canada considerable pulp-wood. There are vast quantities over the

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border and it is much cheaper in Canada than in the United States, both on account of the less demand compared with supply and because the Provincial Governments own the larger part of the timberlands and they sell the pulp-wood at a nominal price. This is known as Crown-land wood. As a matter of fact, most of the pulp-wood imported has come from private lands, but the competition of the Crown-land wood has heretofore fixed the price of the private-land wood. Canadian wood can be laid down at some of our mills a little cheaper than domestic wood—just enough to make it available. Only about 20 per cent of all our pulp-wood comes from Canada, and only a small part of this has been coming from Crown lands, so that the Canadian restrictions on the exportation of pulp-wood, which only apply to Crown-land wood, will not deplete our supply, although the result may be a slight increase in value.

VAST RESOURCES OF THE UNITED STATES STILL UNDEVELOPED

If no Canadian wood whatever were imported here, it would not jeopardize either our paper industry or our forests, provided we were protected in our market by a fair duty. Vast timberland areas throughout the Southern and Northwestern states, as yet unexploited for pulp-wood, would supplement our present domestic sources of supply. Under the stimulus of adequate protection many new varieties of wood would be demonstrated to be usable. Almost the whole vegetable kingdom—hundreds of fibres of plants and trees—awaits only the commercial incentive to be of service in making papers of all kinds. There is an everlasting supply of raw material in the United States. Less than 2 per cent of all the wood cut in the United States is pulp-wood, and yet, because at the present moment through a practical subsidy by the Canadian Provincial Governments paper made in that country can be delivered to our newspapers, if it pays no customs duty, cheaper than we can deliver it and pay American prices for labor and materials, our politicians, at the behest of the publishers, seem ready to turn over the industry to Canada on the specious plea that we lack the raw material here at home. Half of our various industries would be blotted out if the same fallacious argument prevailed generally.

TWO FEATURES OF FORESTRY

The part that Colleges and Experiment Stations may play in its Development

FROM A PAPER READ BY F. W. RANE, MASSACHUSETTS STATE FORESTER, BEFORE
THE ASSOCIATION OF COLLEGES AND EXPERIMENT STATIONS AT COLUMBUS, OHIO

I TAKE it for granted at the outset that forestry is already acknowledged to be a subject worthy for consideration by our colleges and universities and well adapted for a place in their curriculum; also that experiment station officials feel that were they able to enlarge their staff by the addition of a forester, results could be expected in this line of agricultural development in their respective states.

Forestry is nothing other than an agricultural crop which demands modern methods of culture and management, as other plants, for both economic and æsthetic results. The forest crop or forestry at once calls to mind a large class or group of plants of the vegetable kingdom whose fundamental importance to a State or nation is necessarily closely related with its success and progress. Wood or lumber finds innumerable uses.

When our forefathers came to these shores, they found magnificent primeval forests in all their glory—a vast field of grain waving before the wind as it were. Individual specimens of white pine in New England, Michigan, Wisconsin and Minnesota; Black Walnut in Ohio, Pennsylvania, West Virginia, Kentucky; Black Cherry throughout the eastern United States; Chestnut, Massachusetts to Georgia; Tulip Tree, throughout the Appalachian Range; all these and many more species could be found that would cut upwards from three to six thousand feet board measure from a single tree. What has become of these Monarchs of the forest? Today we point with pride to the forests of the great west and northwest which still remain, but how long will these forests continue to stand judging from the wasteful methods of the past? Because the East wasted its birthright, now the West claims similar privileges.

We have possessed a nation flowing with milk and honey, figuratively speaking, streams teeming with fish, precious minerals, coal, oil and natural gas in abundance, wild animals and game of a large variety, forests nearly everywhere excepting on the rich prairies, soils adaptable for most any kind of crops, etc., and what have we accomplished with this heritage thus far? We have built and established a nation great among the nations of the world. This we Americans are proud of and we have every reason to be, as our record shows. It was but yesterday our ancestors arrived here and today, we are a world power—in point of time but a brief minute compared with the lives of nations.

In the development of the nation, we have not wanted for natural resources; they have been awaiting our use. To an intelligent audience of scientifically trained men like this it is unnecessary to paint any word picture of our development; to simply ask you to give the subject consideration is to call its evolutionary history to mind.

Presidents, directors and workers generally, who have coöperative interests in this organization, all realize from their life's work the importance of economic utilization and conservation. There is undoubtedly no force that has met our nation's needs and furthered her real fundamental development of permanency than the work of the institutions represented in this organization.

At the recent National Conservation Congress held at Kansas City, I was particularly impressed with the fact that the men that that organization now falls back upon for permanency are largely the product that is the outgrowth of the work of the Land Grant Colleges and Experiment Stations. Conservation of Natural Resources is a phrase which has sprung up like a mushroom in the night and has emphasized through its popularity and significance what appeared at the time a new idea. This sudden culmination, however, was made possible through the educational conditions that have been constantly at work during recent years together with the psychological time in the nation's development.

RESTORATION VS. CONSERVATION

In presenting the report from Massachusetts at the recent Conservation Congress, I took the liberty of discussing briefly the following "Restoration vs. Conservation of Natural Resources," and as it is more or less applicable, I beg your indulgence in repeating a part of it:

Restoration vs. Conservation of Natural Resources.

"In Massachusetts the work of restoration is even of more importance than conservation when applied to forestry. The annual cut of our forest products at present amounts to only five per cent. of that used each year throughout the Commonwealth for manufacturing, building and other purposes. Surely we can and ought to supply a larger amount of our own home grown woods. Although the State has been well cut over, even now our present wood harvests play an important factor in the industries of many of our rural sections. While, we believe thoroughly in conservation where it will apply, still the more potent force here begins farther back. We need to teach the A B C of restoration in Forestry. When our work of reforestation shall have begun to demonstrate its value, it will be an object lesson, which will mean much toward perfecting a better state forest policy."

Practical forest restoration, therefore, is what Massachusetts needs most. If we will reconvert our hilly, rocky, mountainous, moist, sandy, and waste non-agricultural lands generally into productive forests, the future financial success from rural sections of the Commonwealth is assured. This is no idle dream; it can be accomplished. Massachusetts is a natural forest country and all that is needed is simply to assist nature, stop forest fires and formulate constructive policies. Then we can grow as fine forests as can be found

anywhere. Germany and many of the countries of the old world have already demonstrated what can be done. Are we to be less thrifty and farsighted? Americans do things, when they are once aroused, and it is believed that reforestation and the adopting of modern forestry management must be given its due consideration in this State from now on.

The writer has been delighted in following the interest that has been aroused and the great tendency for all our people to not only welcome and appreciate the new idea of "Conservation," but to even credit the term or phrase, as covering every phase of new endeavor.

It is not my purpose to lessen the glory one whit, or bedim a single gem in the crown of the national phrase "Conservation of Natural Resources," nor could I were it to be tried, for the heralded motto has already stamped itself firmly upon the nation.

As time goes on, however, it will be found that our popular phrase will not carry with it the whole panacea of overcoming our wasteful and depleting conditions, and that new and equally applicable terms though perhaps never so popular, will come to express more aptly our real needs.

To my mind the phrase "Restoration of Natural Resources" vies with that of "Conservation of Natural Resources" and expresses a force to be aroused in the nation for good that in many ways surpasses the present popular one.

We have our forest reserves and minerals that are left, and now to conserve them economically is a worthy undertaking, but in the older sections of the nation to conserve what we have in depleted and worn out lands and forests is to pick the bones of the withered and shrunken carcass.

Let conservation apply where it may, but the force that is needed in Massachusetts and all of New England, yea, the South, extending even well into the middle of the nation, following the great depleting agricultural cereal and cotton crops on the one hand, and the lumberman's axe and forest fires on the other, is greater than this term can begin to express.

The term "Restoration of Natural Resources," I claim, meets our present needs far better and breathes greater hope and definite accomplishments for our children's children in the future.

GROWING AS WELL AS HARVESTING

Forestry, although it is an agricultural crop and must have greater consideration in the future, has not received the attention it deserved until practically the present time. Forest products have been relatively abundant and cheap in nearly all sections of the nation. Suddenly our needs began to outstrip the supply and then with advancing prices lumbermen and the public generally have gradually awakened to the necessity of providing for our present and future needs. We find that it is not only a question of harvesting the crop from now on, but one of growing it. There has been little demand for educated foresters in the past as the undertakings were mainly those of economic methods of lumbering.

Saw logs in the early days were 16 inches in diameter or more, while today with us in New England lumbermen consider the 5 inch saw log of

equivalent value. Box boards usually cut from white pine regardless of size of the log or gnarliness of the tree, with wany edges and the bark still adhering, bring more money today than did square-edge, clean, clear stock not many years ago. A prominent Boston timber cruiser, who has spent the past few years throughout the South, called at my office within ten days and his version of the depletion of the natural forest products of that section was really amazing.

To my mind there are few subjects wherein the organizations represented at this association need to participate more actively than that of forestry. Just because there has not been a definite demand and apparent need until now is not an excuse for present lethargy.

The older members of this association can well remember the earnest and farsighted appeal made to this body by the late Samuel B. Green, of the University of Minnesota, Department of Forestry. Professor Green was particularly anxious that the Government be called upon to enact a law whereby each State should have a definite appropriation yearly for carrying on forestry work. The idea was carried as far as presenting the matter before Congress H. R. 9219, and known as the Davis Forestry Bill. The bill called for an appropriation of \$5,000 by the National Government on condition that each State appropriate a like sum. Professor Green said, "when we think of the enormous value of the forest output of this country, the amount requested to educate young men to be competent to take care of this forest wealth, seems trivial indeed. I do not wish to see all the agricultural colleges attempting to turn out professional foresters, and such would not be the effect of these proposed expenditures; but the result would be that in a short time we would have a surplus of young men well trained in the basic principles of forestry, through whose efforts the forest sentiment of today would crystalize into a permanent and helpful thing."

Do we realize that this plan carried out would mean an expenditure of only \$250,000 a year from the National Government and as well furnish an incentive for the States to take advantage of the assistance. This would result in placing the work on a progressive foundation at once.

For some reason, we did not take to the idea enthusiastically. There is no legitimate reason even now for not using our present governmental funds for this work, but this might cause necessary adjustment and financial complication. Consequently we have been prone to let well enough alone.

A DEFINITE POLICY IS NECESSARY

One thing is certain, we are losing valuable time in not having a more definite and well defined policy of development for forestry throughout the Nation. While here and there our most progressive states are doing something in forestry work which example is worthy and is gradually being followed by others, nevertheless, we are one people and a fundamental industry so important to the nation's welfare should enlist all educational leaders of rural economics in its behalf.

Economically the forest crop of the future must play a very important part. Those of you who have not had time to study it, may be interested in knowing its importance to even a small State like Massachusetts. We have in Massachusetts approximately 5,600,000 acres of land and of this acreage three-fifths, or practically 3,000,000 is unadapted to tillage or general agriculture. These lands, however, under management can all be devoted to forestry. Upon a single acre of such land, we have demonstrated from a thorough study of the white pine that we can grow 40,000 feet board measure in 50 years, or an average of 800 feet per year. As stumpage is worth from \$6 to \$12 a thousand at the present time this would mean an average annual income of from \$4.80 to \$9.60. Were it possible to practice modern forestry management therefore, over our entire 3,000,000 acres of forest lands in Massachusetts it would mean an annual income of from \$14,400,000 to \$28,800,000. These figures may seem very startling at first, but I offer them for your deliberate consideration. Please remember that the above figures are based on present prices in Massachusetts and I am willing to leave it to your judgment, whether future prices are not likely to be even higher.

What is true of the growth of white pine in the old Bay State is more or less true of forestry conditions elsewhere. When we consider stumpage prices, we must consider also that these conditions realized, mean economic employment of manual labor, teams and machinery, together with the saving of transportation on raw material and the giving of employment to rural sections during the winter resulting in an all year round occupation.

While Massachusetts does not typify every State it exemplifies that forestry and forest products demand our consideration.

The United States Forest Service has done and is doing splendid work which is having desired results and many States have well organized departments of State Forestry, but it remains for this association through its present splendid organization to become more elastic, welcoming the necessary extension of its curriculum and investigations to include forestry.

I believe that every State should have its State Forester whose whole time can be spent in determining and carrying out a definite State forest policy. Fire protection and regulation, reforestation and general modern forestry management need constant State supervision and encouragement.

EDUCATION OF THE PEOPLE

With a National and State organization perfected the only thing lacking is the great assistance that must come from educating the rank and file of our people who are to own and manage these forest lands. There are no institutions to which this work more naturally falls than to our Land Grant Colleges and Experiment Stations. Already these institutions are doing for our people everything possible in every other line of agriculture; then why should not forestry be included along with horticulture and agronomy? The department of Botany necessarily teaches the fundamentals of the science and with little additional equipment and assistance any botanical department could give a course in forest botany. What is true of botany is equally

true of entomology, physics, plant pathology, etc. Again, I firmly believe that forestry should be required in the agriculture courses to a point sufficient for a comprehensive knowledge of it, allowing students opportunities to specialize later on.

The principles of forestry can readily be taught in our short courses and elementary schools provided the fundamentals of botany, soils and nursery work precede the same. But here again this is made possibly only through competent teachers, the product from the Land Grant College or similar institution.

Please do not understand me as an advocate of more forestry schools, which endeavor to educate the so called technical forester as I believe we have probably enough of this class of institutions already, but that there is a great and growing need for a general forestry education sufficient to practicing modern methods, I am certain.

In Massachusetts again, I believe we have the ideal arrangement. The State Forester has immediate charge of the shaping and carrying out of the State Forest policy. The State Forester also gives lectures yearly at the Agricultural College covering his field of work. The Massachusetts Agricultural College has a Professor of Forestry whose privilege it is to see that all students are taught a working knowledge of the subject. Where certain students have shown special proficiency in forestry they undoubtedly upon graduation may secure credits in forestry schools, but the college does not claim to turn out a technically trained forester.

By this system of organization, I am convinced that very satisfactory results can be realized. There is certainly plenty of work for a State Forester to accomplish without his being tied down to teaching or doing much research work. His work compels him to be familiar with the general State conditions, and the administration of field work in forestry management, reforestation, nursery work, forest insect and disease depredations, the care and management of State forest reserves, forest fire protection, etc. The handling of the forest fire problem alone requires a great amount of supervision to get satisfactory results. The installation and management of lookout stations, the work of securing modern forest fire fighting equipment for towns and townships, and keeping it properly housed and cared for so as to be effective, for proper efficient patrol systems in dry times; all these demand constant attention. To keep a forest fire system effective the State Forester must be in close touch with the working unit. What is true of forest fires is equally true of seeing that forest working plans are properly executed and that all forestry practices are performed in a practical way.

It therefore, remains for the Professor of Forestry to do the teaching of students and the Station Forester or the Station Botanist, Entomologist or Pathologist to undertake the lines of pure investigation. With this definitely outlined plan results are bound to come.

In closing, I simply desire to appeal to this association in behalf of a more wholesome position than we have yet reached in recognizing forestry or the forest crop as needing and deserving more attention than we are at present giving it.

CONVENTION OF FORESTERS

THE fifth annual convention of the Pennsylvania Department of Forestry will be held at Harrisburg on March 5, 6 and 7, and a very interesting program has been prepared. It is as follows:

Tuesday, March 5. "THE FORESTER AND HIS COMMUNITY." Morning session, 10.30 o'clock.—Addresses of Welcome, by Hon. John K. Tener, Governor, members of the State Forestry Reservation Commission and visiting friends. 1. The favorable or unfavorable attitude of the community toward forestry. (a) The reasons for this attitude, A. C. Silvius; (b) How many causes leading to an unfavorable attitude be removed or ameliorated, Alfred E. Rupp.

Afternoon session, 2.30 o'clock.—2. The attitude of the forester toward his community. (a) The reflection of his attitude toward his rangers and employees, Raymond B. Winter; (b) His contact with the community—(1) His attitude toward his work, Tom O. Bietsch; (2) Interest and help in matters outside his work, Harry E. Elliott; (c) The results of reaching school teachers and pupils, R. Lynn Emerick. Evening lecture 8.15 o'clock, House Caucus Room, Capitol.

Wednesday, March 6. "FOREST UTILIZATION." Morning Session, 10.00 o'clock.—1. The importance of an early removal of dead and defective trees. (a) Protection at a profit, William F. Dague; (b) More rapid regeneration and growth, T. Roy Morton; (c) Early returns and their effects on the investment, Prof. E. A. Ziegler; (d) How clearing may be done with least expense to the Department, Harold E. Bryner.

Afternoon Session, 2.30 o'clock.—2. Impossibility of utilization without knowledge of markets and specifications. (a) Importance of obtaining detailed local information by each forester, John A. Bastian; (b) Assistance of Department, James E. McNeal; (c) Department a clearing house with reference to these matters, George H. Wirt. 3. Detailed record of cost of marketable forest products under varying conditions, Lewis E. Stanley. 4. The relation between roads and markets. (a) Study of markets before road development, Harry A. Thomson; (b) Sylviculture dictated by road conditions, Forrest H. Dutlinger.

Thursday, March 7. "MANAGEMENT." Morning Session, 10.00 o'clock. 1. Study of Plantations. (a) Expedient methods of reforestation wholly or partly deforested areas, Hon. S. B. Elliott; (b) Protection of plantations, John W. Seltzer; (c) Importance of careful plantation records, Prof. I. T. Worthley; (d) Records and protection of plantations in foreign countries, George A. Retan.

Afternoon Session, 2.30 o'clock.—2. Business methods in forestry. (a) Forest reserves a State investment, John L. Strobeck; (b) An immediate or future profit for each operation, Homer S. Metzger; (c) The importance of detailed records from the beginning of operation, Prof. Joseph S. Illick; (d) Scientific management in forestry—(1) Combination and concentration of abilities and resources, Walter D. Ludwig; (2) Scientific study of operations, John R. Williams; (e) Outline for uniform reports by foresters, D. Kerr Warfield.

THE AMERICAN MENTAL ATTITUDE ON CONSERVATION AND ITS GROWTH

By BOLLING ARTHUR JOHNSON

MR. R. S. KELLOGG, who has written much and practically, on forestry matters, believes that efficiency and coöperation will be the key notes of future success; that only by efficiency in the details of production is it possible to decrease cost and improve quality; that only by frank and hearty coöperation between producers is it possible to maintain the equilibrium between supply and demand, to avoid the waste and destruction to which unlimited competition inevitably leads; that no lumberman wastes because he wants to buy; that all have wasted because there seems to be no other way to do; that just as long as operations are conducted on the present plan, the present waste will be inevitable, and that coördination in manufacture is necessary.

The conservation movement has gone forward like a lambent flame across the ground, as Kipling describes the wizard speed of a certain polo player of India.

Efficiency methods in the running of all lines of business, the feeling that it is as criminally careless to waste a piece of wood as it is to toss a loaf of bread into the street, will have to become a mental attitude in the United States before the idealists, the so-called "Forestry Dreamers" shall have been satisfied or should be satisfied.

That very attitude, too, is beginning to show in many ways. While lumbermen as a class have not indorsed the forestry movement, they are not to be arraigned on the subject, for they have gone much further in the direction of the adoption of proper forestry methods than has the great general business public gone forward in endorsing the methods of efficiency as preached by that apostle of Scientific Management, Frederick W. Taylor.

Mr. Taylor is more generally misunderstood by the rank and file of business men today than is forestry by the average lumberman. This fact was well illustrated only a few days ago by the remarks of a high class, careful business man who had recently attended a great banquet given by a great business association which Mr. Taylor had addressed, no doubt scientifically, and this man was really bored by what he had heard and by what he had seen and he thought that many others were also bored by what they had heard and seen. This gentleman went so far as to make fun of the great man's endeavors to illustrate his ideas by drawings and was quite insistent that "Nobody could tell *him* about *his* business." Now that is the attitude of the average American about anything. He has not yet become fond of being taught how to manage his affairs from the printed page of books simply because he has not yet reached the first form in the grammar school in his education as a "Citizen of the World."

All indications show, however, that when he does go forward along new lines of thought, he will go like Kipling's polo player, like his trains travel, like he does business generally, like he goes when he fights as a bull or a bear in the wheat pit.

Conservation and all its kindred "isms" has taken hold of the American mind more than sporadically,—it is really assuming constitutional activity.

Jolting out to the lumber district a day or so ago in a rather smelly and not nearly up-to-date car in this great western metropolis of Chicago, I overheard a remark to show that the idea of efficiency in management has filtered down a long way. Two young railroad men were talking. They may have been switchmen and were sooty and dusty with the grime of their labor, but their eyes were bright with health, and while their pronunciation was very much "Chimmie Fadden," they talked with intelligence, if not with elegance.

A butcher's wagon had stalled so that a wheel almost grazed the car. The name of the butcher had been beautifully painted on the side of the meat delivery bus, and it was large, attractive and noticeable, but to the average man it was only a name, but to one of these young railroad men it was something else and he said:

"Say, Bill, ain't dat de name of de guy wot told all the railroad brass collars how to save a million dollars a day in running de roads?" It was a similar name—Louis Brandis.

Having reason recently to go out into the length and breadth of the literary realms of this country to secure articles on wood waste efficiency, conservation, and all those cousins of the forestry movement for publication in a lumber newspaper soon to be launched in the West, I was surprised by the number of high class people who knew what was wanted and caught at the spirit of the thing at once and offered to write reams and reams of publishable stuff that I only feared could be gotten in such niggardly quantities that the assembling of it would be difficult. This was borne in on me early in November when I met an old friend, an advertising man, whose real business is advertising signs, putting up those odd and awful things that direct people to somebody or another's soap, or declare by winking lights that someone's automobile is the only one on which the wheels are really round.

At all events, I never had any right in the world to imagine that this most interesting friend of mine was a possible contributing editor.

But he was.

Something was said, of course, about the subject of most interest to me and this great big forceful American, the engineer of the blinking lights, leaned across the table, in the buffet smoker on the train and long after even the porter had gone to bed talked of a summer that he had spent with the Over Forester in the Great Black Forest in Baden Baden, and of the times when the trees were to be sacrificed and the preparations that were made for taking down those trees that had ripened and of the old women and the boys and girls who always gathered about eager for the privilege of gathering up every little twig and limb in order to carry it away and use it. It was a pretty story and it will appear some time in the column rules in extended form.

We, who love trees sentimentally, but who wish to use them as they were intended to be used, should not feel in the least pessimistic on account

of the apparent slowness with which the lumbermen as a class have assimilated forestry methods and ideas. The few people who are really in earnest in the matter of forestry are great big forceful men standing on the hill-tops of the lumber world and it is natural that it should be so. The rank and file are coming along in the direction of a full indorsement of these methods, just as swiftly and more swift, as among lumbermen as a class, than the great public is moving, as indicated by the remarks of the young railroad man made about Mr. Louis Brandies, whose name he saw on the butcher's cart.

FORESTS FOR WYOMING

By HON. JOSEPH M. CAREY
GOVERNOR OF WYOMING

I BELIEVE everything in reason should be done by the general government, by the states and the several counties of the states, to protect the forests of the country; that wherever it is possible there should be seed planting and tree planting, with a view of growing forests where it is possible to grow them, or where the former forests have been destroyed. This can only be done successfully in a dry country—and Wyoming may be said to be one of the arid states—where there is a little moisture, or where the trees and plants may be fed moisture from irrigation canals and irrigation systems.

By actual experience it has been found that where certain kinds of trees may be artificially watered, they grow rapidly in a comparatively short time to such a size as would make railroad ties or ordinary building lumber. To illustrate: Wherever a ditch or canal is cut in this country and there is any protection whatever from the winds, trees spring up rapidly from the seed borne on the waters of the irrigation ditch. The late Sterling Morton, who did so much for tree planting in this country, said that in this prairie country trees should be planted on the ground not needed for rights-of-way, for ordinary farm roads and railroads. He even went so far as to say that in a very short time, by the planting of certain varieties of trees, that railroads would have near at hand a supply of lumber to meet their annual demands for railroad ties.

Wyoming has some good forests, and in most instances the plan adopted by the government is followed, in that only the mature trees and those approaching a condition of decay may be cut down, with all precautions being taken to destroy the refuse and avoid fires. The only objection to their system is that the government has included within its various reservations, large areas without lumber and lands that they do not expect to try to forest or reforest.

I go so far as to state that I think if the great white pine forests of Minnesota, Wisconsin and Michigan—probably as valuable as ever has been discovered—had been protected by the cutting of the decayed trees and protecting the young growth, that these forests would have lasted for all time. They are gone, however, or virtually so, and the question now is to see what can be done to supply their places and to protect the other great forests that exist within the domains of the United States.

AMERICAN FORESTRY ASSOCIATION RESOLUTIONS

AT the annual meeting of the American Forestry Association in January the following important resolutions were presented and adopted and copies of them were sent to each United States Senator and Congressman and to the Governors of all the States and Territories:

RESOLUTION NO. 1

Whereas, the Weeks Act provides an appropriation of \$200,000, available until exhausted, to enable the United States Government to co-operate with states in protecting from fire the forested watersheds of navigable streams, and

Whereas, the experience of the past fire season has demonstrated the effectiveness of such co-operation in reducing the damage caused by forest fires,

Be it Resolved, That the American Forestry Association urges upon Congress the continuation of appropriations to be available annually for this purpose, and

Be it Resolved, That a copy of this resolution be sent to the members of the Senate and the House of Representatives.

RESOLUTION NO. 2

Whereas, an equitable system of forest taxation is one of the essential fundamentals for the practice of private forestry and as little progress is being made in providing a tax basis which will not put a premium on the cutting of timber, be it

Resolved, That the American Forestry Association recommends action by the executives and legislatures of all forested states towards the enactment of legislation which will encourage timber production both by the long time management of existing forests and the planting of new forests, and we recommend to this end that the taxation of forest lands be placed as fast as possible under state control, and be it

Resolved, That copies of these resolutions be sent to the governors of all states concerned.

RESOLUTION NO. 3

Whereas, a virulent fungus disease known as the Chestnut Tree Blight has already infected a large portion of the region wherein the wild chestnut tree is a native, and threatens the destruction of this valuable timber tree throughout its range in the United States; and

Whereas, the great body of wild chestnut in the New England States, in New York, New Jersey, Pennsylvania, and Maryland has been reached by this infection, and vigorous efforts are required to prevent its further spread into the states of Delaware, Virginia, West Virginia, Ohio, Indiana, Michigan, North Carolina, South Carolina, Kentucky, Georgia, Tennessee, and Alabama; and

Whereas, the states not yet reached by the infection are justly entitled to every possible help and protection which Congress and the states themselves may be able to employ in saving their chestnut timber from attack; therefore, be it

Resolved, That the American Forestry Association pledges its support in arousing the public to combat this disease.

Resolved, further, That the American Forestry Association strongly urges the members of Congress to support a bill now pending before that body appropriating \$80,000.00 for the use of the United States Department of Agriculture, to be used in a thorough study and investigation of this tree disease, with the view of devising ways and means to combat its further spread, and to subject it to possible control, and urges the executives and legislatures of the states named above to take measures to check the spread of the disease.

Resolved, That a copy of these resolutions be sent to each member of the Senate and House of Representatives in the Congress of the United States, and to the governors of the states concerned.

RESOLUTION NO. 4

Whereas, there are now over 14,000,000 acres of private timberland in co-operative fire protective associations, and

Whereas, experience has shown that these associations have been effective in materially reducing the damage caused by forest fires on their own and contiguous forest lands, be it

Resolved, That the American Forestry Association recognizes the great value of co-operative fire protection and most heartily commends the public spirited action of the associations already formed and strongly urges the timberland owners of all sections of the country where fires are serious to avail themselves of the benefits to be derived from such co-operation, and be it

Resolved, That a copy of these resolutions be sent to all such associations now in existence and to all lumberman's associations who do not co-operate for fire protection.

RESOLUTION NO. 5

Resolved, That it is the duty of state governments to encourage the practice of forestry by private owners and that the most effective means to this end are efficient fire protection, education, and state forests, and reform in forest taxation.

That it is necessary, in order to secure an effective system of fire protection that a state system of control and inspection be perfected, supplemented as far as possible in dangerous regions, by state patrolmen employed continuously throughout the danger season.

That in this connection states be urged to co-operate with the national government under the Weeks law by establishing a system of patrol sufficiently effective to enable them to secure a proportion of the congressional appropriation for this purpose.

That the educational efforts of states should take the form of popular lectures, professional advice to timberland owners and short courses of instruction in state institutions.

That states should acquire land for the establishment of demonstration forests and experimental areas and that in no other way can forestry be so effectively advanced as by the actual practice of forestry by the state governments.

That states should acquire large tracts of land unfit for agriculture either because of its mountainous or sandy character, and should devote it to growing timber, as a matter of state economy.

That the forestry work of states can be best conducted by technically trained foresters with practical knowledge of conditions, and that it is of vital importance that the forester's office be entirely free from political influence

FORESTRY DEPARTMENT FOR UNIVERSITY OF IDAHO

BY the action of the lumber and timber interests of northern Idaho the University of Idaho will soon have one of the best equipped forestry departments in the United States. \$58,000 was voted at a meeting of the Northern Idaho Forestry Association held in Spokane to consider the question of prorating the timber holdings of the members of the Association to raise funds for the erection of a Forestry building at the University of Idaho. President MacLean and Dean Carlyle were present and outlined the work and future problems and possibilities of the Forestry department. Dr. C. H. Shattuck, head of the department, explained his work in seeking commercially profitable processes of handling the by-products of the lumber industry. Realizing that only scientific investigation can discover such processes, the lumber and timber men of northern Idaho voted the money needed to enable Dr. Shattuck to carry on his investigations.

"Sawed products," said Dr. Shattuck, "represent less than forty per cent of the total products of the tree. The lumberman needs the help of the scientist in finding ways of utilizing the sixty per cent. In Europe the by-products are often more valuable than the lumber products. Among the valuable by-products of our western woods for which there is an increasing demand are: ethyl alcohol, thirty-four different kinds of paper, turpentine, rosin, creosote, shingle stain, fir balsam, oils of various kinds, pyroligneous acid, acetic acid, tannic acid, sugar, tar, pitch, charcoal and coke."

"The lumber manufacturers of the Northwest have failed to utilize these by-products, not from choice, but through necessity. It is the purpose of the University of Idaho to co-operate with them and to carry on experiments to devise methods of extracting in the most economical manner the by-products from the woods of this region, and also to discover uses and markets. This part of the work will be put in the hands of an expert industrial chemist. In addition to these lines of work, we intend to conduct high-grade courses in Forestry, with laboratory courses in lumbering and secondary wood-using industries, and also a strong course in logging engineering."

The tentative plans for the Forestry building, upon which Dr. Shattuck has been working for some time, call for a three-story building, with a one-story annex for a practical saw-mill and wood-treatment laboratory. There will also be a basement to contain the forestry-pathology department.

The main portion of the building in the tentative plan is to cover 60x100 feet. On the first floor will be the library, a suite of offices, draughting rooms, a museum, an auditorium and the wood distillation laboratory.

The second floor will have lecture rooms, the wood-structure laboratory and the herbarium and dendrological laboratory. On the third floor will probably be offices and research laboratories.

In the saw-mill there will be one working floor, with a filing room above. On the working floor will be the timber testing laboratory to test the strength of timbers, the wood-products laboratory for making boxes, shooks, etc., the wood working machinery, a band saw, the motor and boiler, trimmers and grading tables, a re-saw and edger, a dry-kiln, the timber preservation laboratory, with vats for both open and pressure processes, and a small pulp mill. The mill will be run by machinery.

The building will be erected in the near future, as both the school authorities and the lumber and timber men are eager to have the work begun as soon as possible.

QUESTIONS AND ANSWERS

Many of our readers frequently desire to secure some expert advice regarding various features of forestry work, and do not know to whom to apply for the information.

The Editor has accordingly decided to establish this column in which he will be glad to publish such questions as may be sent to him, and give the answers, whenever the questions relate to any detail of the work which this Association is doing or such information as it can give.

The Editor requests that communications be written on one side of the paper only and if possible, be typewritten.

THE CHESTNUT TREE BLIGHT COMMISSION

IN nineteen hundred and eleven the Pennsylvania State Legislature passed a bill authorizing the Governor to appoint a Commission of five citizens for the purpose of thoroughly investigating the Chestnut Tree Bark Disease which is rapidly destroying the chestnut trees of the Commonwealth. The Act placed an appropriation of \$275,000 at the disposal of the Commission for the investigation and scientific study of the problem, and more specifically to ascertain the exact extent of the blight, and to devise ways and means through which it might, if possible, be stamped out.

The Commission was appointed in June, 1911, and, after organization, began its work immediately by sending a large force of experts into the field. The reports of these experts together with the results of the work of the pathological staff, will, among other matters, be presented for discussion to a Convention called by the Governor to assemble at Harrisburg, Pa., February 20th, next.

In order that the other States not yet touched by the blight, but certainly in its line of advance, may realize the seriousness of the situation, the Governor, who is much interested, has called this Convention for a consideration of ways and means, in the hope that the States may be aroused to action and be ready to meet the invasion at their borders. Pennsylvania's problem is now or soon will become the problem of Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, Tennessee, Kentucky, West Virginia, Ohio, Indiana and Michigan. Active co-operation of the States is essential. And the attendance of a large number of delegates is expected.

Mr. Harold Pierce, Room 1112 Morris Building, Philadelphia, is the secretary of the Commission.

The nurserymen of California recently effected an organization for the purpose of "advancing the material and social sides of the nursery business." Among the promoters of the organization are F. H. Wilson, Leonard Coates, Fred H. Howard, Almon Wheeler, Thomas Chisholm, George C. Roeding, John S. Armstrong, and E. Gill, Mr. W. V. Eberly, of Niles, California, was elected president.

The Wisconsin forest reserves have increased in the last six years from 40,000 to 423,000 acres, but the State must have a reserve of at least 2,000,000 acres in order to protect the headwaters of the most important rivers, according to the statement made by State Forester E. M. Griffith in an address on "State Forestry," before the Department of Political Economy and Social Science at Lawrence College.

STATE NEWS

Massachusetts

Secretary Charles M. Bailey, of the State Forestry Division of Massachusetts, speaking on Forestry Development in New England at Boston recently, said: "No question is of greater economic importance in its relation to the future development of New England than forestry. There is no enterprise which offers greater possibilities of establishing permanent prosperity than the clothing of our non-agricultural lands with commercial trees, and the proper conservation of the forests now left to us."

"There are in Massachusetts today approximately one million acres of barren, desolate land now absolutely idle. These acres may again be made to produce timber to the value of millions of dollars. Not only is this true of Massachusetts, but similar conditions exist in the other New England states."

State Forester Rane, working under the provisions of the reforestation law, has now set out more than 40 separate plantations of white pine, covering several thousand acres, at an average cost of less than \$10 per acre. He has on hand now several hundred acres of land ready for planting next spring. The nurseries maintained by the Forestry Department at Amherst will supply the seedlings for this work.

Arkansas

In connection with the administration of the Ozark National Forest, the United States forest service has recently granted rewards amounting to \$250 for evidence furnished leading to convictions for setting fire to the woods. Payments of \$125 each have been made to Joseph A. Bost and John W. Bost, both of Rex, Van Buren County, Arkansas. These rewards are the result of Congressional action taken in the hope of encouraging the conviction of fire trespass cases on the National Forests.

In discussing the case Supervisor Kiefer, of the Ozark National Forest, said: "I am very much gratified with the outcome of this case since it stands as an excellent object lesson to those who are bent upon indiscriminate woods burning. The conviction shows that burning the National Forest is unlawful, and further that this law, which is state as well as federal, can be very rigidly enforced."

West Virginia

A dispatch from Wheeling, West Va., says: "Shortly after the reconvening of Congress, the National Forest Reservation Commission will receive estimates on those tracts of

land recommended by inspectors of the Bureau of Forestry as suitable tracts for the institution of forest preserves."

"West Virginia is vitally concerned in these hearings, as a half dozen inspectors spent a goodly portion of the past summer examining land in proximity to the watersheds of the State that appeared to be suitable sites for the establishment of forest preserves."

"Under the Weeks law, which provides for the Appalachian forest reserve, the government has the right to purchase several thousand acres of West Virginia land conducive to the establishment of reserves."

"Pendleton, Randolph, Pocahontas, Webster, Tucker, Preston, Greenbrier counties, are interested in the hearings; and, as the time for the consideration of opinion on tracts of land in these counties, whose purchase is contemplated by the government, draws near, an influx of lobbyists from the counties named is expected."

Connecticut

The General Assembly of Connecticut, in session in 1911, passed the following act: The state forester and the tax commissioner, with three other persons whom the governor shall appoint, shall constitute a commission, serving without compensation, to examine and consider the laws of this state and of other states and countries concerning the taxation of forest lands. Said commission shall report to the next general assembly the result of its investigations, with its recommendations thereon.

The members of the commission are as follows: State Forester S. N. Spring, New Haven, Conn.; State Tax Commissioner Wm. H. Corbin, Hartford, Conn.; Ex-Governor Rollin S. Woodruff, New Haven, Conn.; Mr. F. H. Stadtmueller, Secretary of the Connecticut Forestry Association, Elmwood, Conn.; Prof. Herman H. Chapman, Yale Forest School, New Haven Conn. The State Forester called the first meeting of the commission on December 29. Ex-Governor Woodruff was elected chairman and S. N. Spring, secretary of the commission. The first meeting included organizing, a discussion of the problems before the commission, and the preparing of preliminary plans for work.

Colorado

A meeting of forest supervisors of Colorado will be held in Denver early in February for the purpose of discussing some of the problems of active forestry work. It is expected that Forester Henry S. Graves will attend the meeting, but this has not

definitely been settled. The session is to be called by District Forester Smith Riley.

Among the problems to be discussed will be proposed methods of disposing temporarily of large tracts of land in the national forests which are not open to settlement, but which are suitable for use of stock during the grazing season. It is the policy of the department, Forester Riley said today, to give the utmost publicity to the existence of these tracts in order that the stock men may take advantage of them.

Indiana

The Indiana Forestry Association held a meeting in Indianapolis a few days ago and elected the following board of directors for the coming year: Governor Marshall, Charles W. Fairbanks, Addison C. Harris, President Bryan, of Indiana University; President Stone, of Purdue University; President McConnell, of DePauw University; Charles A. Greathouse, State Superintendent of Public Instruction; Professor M. B. Thomas of Wabash College; Dr. J. N. Hurty, W. A. Guthrie, John B. Conner, Edgar Perkins and George B. Lockwood.

Ohio

The Ohio State Forestry Society, at its annual session in Columbus on January 11, voted in favor of the state reforesting the lands that revert to it for unpaid taxes, and also of having the state buy cheap lands for reforestation. Addresses were made by Professor C. H. Goetz, of Columbus, Professor A. D. Selby, of Wooster, and others.

These officers were elected: Professor W. R. Lazenby, of O. S. U., president; W. J. Green, Wooster, vice-president; J. J. Crumley, Wooster, secretary; H. C. Rogers, Mechanicsburg, treasurer.

Minnesota

The gathering of pine cones to furnish seeds for the planting of forests in various states of the Union and in Europe is becoming quite an industry in Northern Minnesota, according to reports from Bemidji and other places. Fifty cents a bushel is offered for the cones in most cases, which furnishes a living wage to the boys and Indians who engage in the work and a good profit for those in charge.

Jack pine cones are the principal kind collected, although the cones of all varieties of pine are marketed. According to State Forester Cox, the jack pine seeds are used in Europe for crowding other trees in planting forests.

California

Contrary to the impression apparently becoming current, that prospecting on national forest lands is to be restricted by the forest service, District Forester Coert DuBois, at

San Francisco, has issued a statement, just received by Supervisor E. W. Kelley, of the El Dorado forest, that there is no intention of changing the existing policy of the forest service which encourages prospectors in every possible way. Permits for prospecting on national forest lands never have been and will not be required.

The Act of June 4, 1897, which makes provision for the administration of national forests, specifically says that prospectors shall not be prohibited from entering upon national forest lands for the purpose of prospecting, locating or developing the mineral resources therein.

In harmony with the plan of the Department of Agriculture, to increase the efficiency of the forest service in California, there will be a reorganization of that work beginning with the new year. The increase in the number of forest fires within the past few years and the fact that the forest rangers were compelled to cover such large areas that they could only have personal supervision of but a small part of their territory has made changes imperative.

Oklahoma

Oklahoma is getting into the procession as the following comment from the *Oklahoman*, of Oklahoma City, indicates:

"The larger part of Oklahoma is of prairie formation and, while in the eastern part splendid forests are to be found, Oklahoma has not enough trees.

"One citizen of this state who lives at Nowata has purchased 5,000 trees, which he will plant on his farm. The tree-planting habit has not become epidemic in Oklahoma, although in late years much progress has been made in forestry.

"Since the school children have been taught the value of trees, and have actually engaged in planting them on Arbor Day, there has been a general revival in the interest of forestry and the prairies of Oklahoma are beginning to be dotted with groves of trees that will be as artistic as they are valuable.

"But we will never get too many trees. Every citizen should arrange to plant something next spring, if it be only a single tree. A tree to each person would make nearly 2,000,000 additional trees. As many will plant hundreds and even thousands, only a few years will be required to make the state famous for its trees.

Vermont

The Vermont State Forestry Department knows of three industries that desire to locate in Vermont providing they are assured of sufficient hardwood supply with which to make their product. This information, given out by the Department, is probably an indication that the industries are desirable, and will not damage the state's progressive movement in the matter of forest preservations.

Pennsylvania

There are 15,000,000 acres in Pennsylvania better adapted for growing trees than for pasturage or raising crops. About half of this acreage is either barren and entirely unproductive or the products from it barely pay the expense of obtaining them. The State has bought 945,000 acres of this land, and the present desire of the Forestry Commission is to continue these purchases until not less than 6,000,000 acres have been obtained. It is now waste land and to grow trees on it calls for a long-time investment without any interest until the trees are mature, which does not appeal to private capital. The land is carefully investigated before it is bought by the state and none is acquired which does not have a clear title. The average price paid has been about \$2.25 an acre and much of it can now be sold for three or four times the purchase price, owing to the healthy growth of young timber on it. The public forestry work will be supplemented, as soon as legislative consent can be acquired, by assistance to private timber land owners. It is proposed that all private timber lands placed under the direction of the State Forestry Department shall be assessed at only \$1.00 an acre for a number of years, and in return for this low assessment the tracts must be cared for in accordance with the directions of the Department.

Kentucky

The Governor of Kentucky, in his annual message to the legislature on January 2, said in part: "I believe it is imperative that the General Assembly adopt a proper and adequate policy of forest protection, not only with the purpose of saving the timber now standing, but of reforesting the cut-over, the burnt-over and unforested districts of the state. A majority of the states are maintaining bureaus of forestry.

"I recommend:

"First—A State Forester, to be appointed by the Governor, who, by training and experience, is thoroughly qualified to handle technical forestry problems, as well as forestry educational work.

"Second—A campaign of education should be inaugurated and the State Forester should lecture at Farmers' Institutes and encourage elementary instruction in forestry in the public schools; also prepare and distribute appropriate bulletins."

New Jersey

The annual report of the New Jersey State Forestry Commission, sent to Governor Wilson January 8, shows that the condition of forests in New Jersey are improving; that forest fires have become less destructive than in former years: that many penalties have been imposed for violation of laws which have been enforced, and that much good has been accomplished.

The commissioners are unanimous in the belief that forestry has attained a permanent place in this state. Seven years ago, when

the commission was created, the report says that the woodlands of the state were so degraded that few persons believed it possible to save the remnant. Fires in South Jersey and reckless cutting in North Jersey were responsible chiefly for this condition. It is shown that today the situation is far more promising. Interested owners are in control of the woodlands in the north, and the security against fires in the south has demonstrated the forests there still may be saved.

Oregon

State Forester F. A. Elliott, of Oregon, in speaking of the necessity of the conservation of the forest wealth of the state, says: "Owing to lack of transportation facilities, our lumber business has grown very slowly, but last year we jumped from the eighth place among the states to third place; only Washington and Louisiana recording greater lumber production. In a very few years, at the most, we will be manufacturing more lumber than either of these states, and this must continue as long as our timber lasts. It is very important, then, that we use every means within our power for the protection of this, our greatest natural resource, and see to it that there is as little waste as possible in handling, manufacturing and marketing forest products."

Montana

Advices received at Butte, Mont., state that President Taft and Secretary of the Interior Fisher have approved of the plan submitted by Governor Edwin L. Norris and Attorney General Galen recently at Washington, for the creation in Montana of a state forest reserve, which will embrace from 400,000 to 500,000 acres of land.

New York

Bills providing for the reforestation of lands in New York State have been prepared for introduction in the legislature by Senator George F. Argetsinger. For some six months Senator Argetsinger has been devoting much of his time to the study of the question which he found to be complex and in which there were many problems which he found were not easy of solution.

The general plan of the bills is to create an incentive to land owners to plant trees on land which is not now cultivated. To provide this incentive the bills allow a reduction in the tax on land devoted to the growing of trees.

One bill provides for the taxation of auxiliary forest reserves and is a companion measure to one defining and establishing auxiliary forest reserves and providing a penalty for the violations of the provisions thereof.

In section one the bill establishing forest reserves, all land set apart for the growing of trees in accordance with the terms of the bill are made to constitute a separate and distinct class of lands to be known as auxiliary forest reserves.

Florida

Several thousand camphor trees have recently been planted by the officials in charge of the East Bay Florida ranger station at the forest nursery located there and, according to the statement of Forest Supervisor Eldridge, the indications are that this valuable tree will do well in this forest, which will prove much to this section of the state if this be true.

Last year a few hundred of these trees were planted in the nursery at East Bay and Mr. Eldridge says they have shown themselves well adapted to that section, and it was principally due to the apparent success of this first experiment that the government decided to try the experiment on a larger scale and had the planting done this year.

The government has maintained an experimental planting station for the camphor tree near Lake City for the past four or five years and the experiments conducted there have met with such success that efforts

are being made on the part of the government to induce private capital and individuals to undertake growing them on a commercial basis.

Indiana

In his annual report, C. C. Deam, Secretary of the Illinois State Board of Forestry, recommends that the state purchase such lands as will not permanently support agriculture and devote them to scientific forestry. This is the only solution of the problem the board of forestry has to suggest.

The principal argument for such a plan advanced in the report is that the state will never be reforested by any other means. There are thousands of acres of eroded hillsides and worn-out fields in the state which should be planted to forest trees, it says. But investigation shows that in a majority of cases the owners of these lands are too poor to bear the expense of reforestation, so that the matter is neglected and conditions annually become worse.

NEWS AND NOTES

Mr. Graves' Report

Henry S. Graves, United States Forester, in his recently issued report, says of the cooperation with states and private timberland owners:

"The most important work of the year was in pursuance of Section 2 of the Weeks law, which appropriated \$2,000,000 for cooperation with the states in protecting the forested watersheds of navigable streams from fire. Such cooperation is extended only to states which have provided by law for forest-fire protection and have appropriated funds for that purpose. The amount expended by each state must at least equal that spent by the Federal Government. Prior to July 1 agreements were entered into by the Secretary of Agriculture, specifying as the maximum amounts to be spent by the Government during the remainder of the calendar year, if needed, the following: In New Hampshire, \$7,200; in Minnesota, \$10,000; in New Jersey, \$1,000; in Wisconsin, \$5,000; in Maine, \$10,000, and in Vermont, \$2,000. After the close of the fiscal year similar agreements were concluded providing for a maximum expenditure of \$1,000 in Connecticut, \$5,000 in Oregon, \$600 in Maryland, \$1,800 in Massachusetts, and \$2,000 in New York.

"The Federal funds were to be expended in each instance for the salaries of patrolmen exclusively. Cooperative agreements were entered into only after the State had submitted a fire plan and a map showing in detail the number and location of the protective force to be employed, the location of telephone lines, lookout towers and other structures forming a part of the protective system, the amount of State funds to be

expended for various features of the protective system, and how the Federal moneys allotted to the state would be used to supplement state expenditures. The agreements provide for inspection, by officers of the service, of the operation and efficiency of the cooperative protective system.

"Past experience in examining woodlots and privately owned timber tracts has shown that the methods of forestry recommended are actually put into effect in far too small a percentage of cases. While the educational value of the cases where forestry is practised is very great, it is important to increase their number. An attempt to do this is now made by giving greater attention, in the investigation made and reports submitted to owners, to the pecuniary advantages of good over poor methods of management, and by studies of market conditions in order to show owners how best to dispose of the products of their woodlands. Primary consideration is given to the applications and needs of small owners, since they are more disposed as a rule to put the methods recommended into operation.

"As the number of state and private foresters increases, cooperation with private owners is being gradually restricted. The needs of applicants from states in which it is still difficult to secure expert information and advice are, however, so far as possible, provided for. Examinations of a single woodlot in a locality are not ordinarily made. Instead the interest of several owners in a community is sought by informing applicants that a field examination will be made upon a joint application signed by a number of owners in the same locality. The cost of such examinations is shared by the owners, on an acreage basis. In connection

with such examinations studies are usually made of market or other conditions which apply to the community as a whole, and of the possibility of cooperative shipments of forest products. Public meetings with discussions of local forestry problems, the distribution of publications, the formation of local forestry clubs if advisable, and the collection of additional data needed for service publications are valuable features of this work."

The Government has vigorously undertaken the reforestation of Oregon and Washington and during December cones of the Douglas fir have been collected on an enormous scale. For the first time in the history of the Pacific Northwest steps have been taken to replace the forests now being cut away. According to the present plans of the National Forest Service this work will be continued year after year.

Gathering fir cones has become a new industry throughout this state. During September men, women and children picked the cones, being paid 50 cents per bushel for them. They were then taken to the government extracting plant at Wyeth, Ore., where the seeds were extracted, and large areas of the national forests will be reseeded during the coming winter.

A total of almost 10,000 bushels of the fir cones were secured by the forest service or about 7,000 sacks, which will be sufficient to plant about 7,000 acres. This is but the beginning of this work, and each succeeding season will see large additions to the replanted areas as the seed is available.

Homesteaders in western Oregon and Washington, where the fir trees are numerous, made money gathering the cones, receiving three to five dollars per day in many cases where the coniferous trees bore heavy crops.

Formerly the Government secured its fir seed from Germany for the comparatively small reforestation work that has been done in the West, but the foreign supply became inadequate to the demand and, in fact, Germany herself is now seeking to buy Douglas fir seed in America.

Official Recognition

Official recognition of the British Columbia Government has been extended to the Western Forestry and Conservation Association by William P. Ross, of Victoria, Minister of public lands.

In a letter received by Judge A. L. Flewelling, president of the Forestry Association, Minister Ross specifically indorses the work of the association and incloses a \$100 check as a government contribution to expenses.

In reply Judge Flewelling wrote Minister Ross as follows:

"Your letter is one of the most sincerely appreciated testimonials we have ever received. Our two-fold work of bringing about

better public sentiment toward protection of forest resources and of guiding and encouraging liberal expenditures and improved methods by forest owners is, we think, having excellent results, but it is especially gratifying to learn that you, on the other side of the line, have found it worth noticing and approving in such a substantial manner."

A County's Ambition

An effort to have 50,000 trees planted in Onondaga County, New York, during the coming year will be made by the Board of Supervisors. Untillable lands will be used for this purpose.

Not so very long ago the Board of Supervisors appointed a committee on reforestation and Charles S. Keller was placed at the head. He has made a thorough study of the lands of the county and reforestation, and has planned to make this one of the county features next year. He has been in communication with the Forest, Fish and Game Department of the State, and is now in a position to carry on the work of reforestation the county on an extensive scale.

Minnesota's Good Work

Note should be taken of the practical work being done for forest conservation in Minnesota, where 30,000 acres of bare prairie have been planted with trees under the State law which allows a maximum bounty of \$15 an acre for successful planting. The limit for which this bounty is paid to one person is \$150 for 10 acres in the course of six years, and it is estimated that only one acre in 20 now being grown to timber receives a bounty, but the law is said to give an effective stimulus to private enterprise.

A Government Timber Sale

The Government is advertising for bids on a large body of timber on the Tahoe National Forest, in California, with an offer of terms which inaugurates an important departure from the policy of the past.

About 73 million board feet of saw timber is offered for sale, with a 10-year period for the removal of the timber. The National Forests contain a vast supply of merchantable timber, estimated at the equivalent of over 500 billion feet board measure, a great part of which is ripe for the ax or already overmature. In many cases, however, the purchaser has to make a very heavy initial investment in transportation facilities. To have this pay, he must be able to figure on a large operation, requiring a number of years to carry through.

The Tahoe sale will call for the construction of 20 miles of railroad, which will be a common carrier and therefore decidedly beneficial to the community—another reason for making the sale which is taken into account. A minimum price of \$2.50 per thousand feet for yellow pine, the amount of which is estimated at 52 million feet, and

also for sugar pine, and of \$1 per thousand feet for all other species, is specified in the advertisement. The interest which has been shown by lumbermen in this sale leads the Forest officers to believe that one or more bids will undoubtedly be received. The usual conditions of cutting National Forest timber, to insure a renewal of the forest and close utilization of what is cut, will be incorporated in the contract of sale.

English Forestry Association

The English Forestry Association has re-

cently been formed, with the following officers: President, Lord Clinton; Honorary Secretary, Mr. Duchesne; Council, the Earl of Shaftesbury, the Earl of Chichester, Lord Hastings, Mr. G. L. Courthope, M. P., Mr. Chas. Bathurst, M.P., Colonel E. J. Mostyn, Mr. S. H. Cowper-Coles, Mr. F. G. Burroughes, Mr. Arthur Arnold, Mr. W. Anker Simmons, and Mr. Gerard H. Morgan. The objects of the association are to encourage the demand for English timber and generally to be of service to English producers of timber.

EDUCATIONAL

Better Forest Schools

Much progress has been made recently in the movement aiming to standardize forestry schools in this country. Chief Forester Graves says of this work: "At present there are some 20 institutions purporting to give high grade training in forestry, but considerable difference still exists in the amount of training and in methods of instruction. At the conference here several days ago reports from 16 of the most important schools in the United States on standardization were discussed at length and a report was presented from a special committee appointed to see what could be done along this line. The committee was retained to pursue its work."

"There is need also of properly-equipped ranger schools. While high grade training is being well taken care of, there is a lack of schools of the lower grade for the training of rangers for work in the public service and in private forests."

Site for Forestry School

Dr. C. A. Schenck, director of the Biltmore forestry school, which is in winter quarters in Germany, has requested the New York State conservation commission to aid him in procuring suitable quarters for the school in the Adirondacks. The Biltmore students will return to the United States early in April, and it is desired to obtain for them quarters near the large New York State nurseries in Lake Clear Junction, where they may have instruction and practical observations in tree nursery work.

Biltmore Students

The Bulletin of Biltmore students' work says: "The end of December finds us still in Darmstadt, deeply engrossed in the studies of the German Forests. Dr. Schenck has completed his course in silviculture, and has headed us into the lines, the angles, and the twists of surveying. Silviculture, as taught by Dr. Schenck, and in the surrounding conditions, has proven a most interesting and beneficial study. The practical experience in making seed-beds, in transplanting and out-planting, and the intimacy with German forestry which we are obtaining through our field work, have been most valuable auxiliaries to the course of lectures. Through

centuries of experiments with many failures and few successes, German silviculture has attained the highest degree of perfection. Here we should be able to obtain the very best training in the subject. And though the United States cannot successfully practise for financial reasons, the advanced German type of silvics for some time to come, we can profit by their experience. American conditions are continually contrasted and compared with those of Europe by the faculty, and methods and solutions are suggested; for we all appreciate the need of practical foresters with practical methods in America."

Gifts to Yale Forestry School

The *Springfield Republican* says: "It is announced that Andrew Carnegie some time ago promised a gift of \$100,000 to the endowment fund of the Yale forestry school as soon as its endowment funds reached \$500,000, and only \$40,000 is now needed to complete that sum. Another promise of \$100,000 to erect a memorial building for forestry purposes has been made by a person whose name is not made public, and it is expected that that fund soon will be paid in. The future plans of the school include the purchase, if the funds can be raised, of a school forest with an area of several thousand acres, to be used for practical forestry work and to be situated as near as possible to the school."

Forest Service to Aid

Another example of that educational co-operation between State and college that is already so common in the West and is rapidly becoming more common in the East, is furnished by the University of Washington which announces a short course in forestry started on January 2. The course is designed especially for forest rangers and guards, for timber owners and for all persons who want some knowledge of forestry and who have only a limited time to give to the subject. The National Government has set its seal of approval on the scheme by promising the lecture services of some of its experts. Instruction will be practical in every sense of the word and an abundance of field work will necessarily be one of the features.

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